"TO EVALUATE VARIOUS ETIOLOGIES OF CHRONIC ORCHIALGIA AND ITS RESPONSE TO MULTIMODAL THERAPY IN CENTRAL INDIA: A PROSPECTIVE OBSERVATIONAL STUDY"

Thesis submitted to

The faculty of

All India Institute of Medical Sciences, Bhopal

For the award of the degree of M.Ch in the subject of

Urology

By

Dr. DHIRENDRA YADAV
(2200048M03S51007)

Under the guidance of

Dr. Devashish Kaushal
Additional Professor and Head.
Department of Urology
AIIMS, Bhopal

OCTOBER 2024

i

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

UNDERTAKING

I, **Dr. Dhirendra Yadav**, M.Ch scholar, registered in the July 2022 batch vide registration no.**2200048M03S51007,** hereby declare that the data submitted for my M.Ch thesis belongs to me and is original.

I also certify that the work was done by me to carry out this study. The Institute shall not be responsible for any dispute or any conflict of interest that may arise out of this thesis at any stage.

Dr.Dhirendra Yadav
Academic Senior Resident
Department of Urology
AIIMS, Bhopal

Dhirendra Yadav

Guide:

Dr. Devashish Kaushal
Additional Professor and Head.
Department of Urology
AIIMS, Bhopal

Place: Bhopal
Date: 15/10/2024

Devash

डॉ.देवाशीष कौशल/Dr. Devashish Kaushal
एम.एस., एम.सी.एच. (यूरोलॉजी)/MS, MCh (Urology)
अतिरिक्त प्राध्यापक/Additional Professor
मूत्ररोग विभाग/Department of Urology
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

ii

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

CERTIFICATE

This is to certify that the thesis entitled **" TO EVALUATE VARIOUS ETIOLOGIES OF CHRONIC ORCHIALGIA AND ITS RESPONSE TO MULTIMODAL THERAPY IN CENTRAL INDIA: A PROSPECTIVE OBSERVATIONAL STUDY"** is a genuine research carried out by **Dr. Dhirendra Yadav**under the guidance and direct supervision for the award of M.Ch degree.

Guide:

Dr. Devashish Kaushal

Additional Professor and Head.

Department of Urology

AIIMS, Bhopal

डॉ.देवाशीष कौशल/Dr. Devashish Kaushal
एम.एस., एम.सी.एच. (यूरोलॉजी)/MS, MCh (Urology)
अतिरिक्त प्राध्यापक/Additional Professor
मूत्ररोग विभाग/Department of Urology
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

Co-Guide:

Dr. Anuj Jain

Additional Professor.

Department of Anaesthesiology, AIIMS, Bhopal.

डॉ.अनुज जैन/Dr. ANUJ JAIN
Reg.No.MP-15394 MD, FICC
अतिरिक्त प्राध्यापक/Additional Professor
निश्चेतना विभाग/Dept. of Anaesthesiology
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

Dr. Kumar Madhavan

Associate Professor

Department of Urology, AIIMS, Bhopal

डॉ. कुमार माधवन / Dr. Kumar Madhavan
MBBS, MS, MCh, MRCS, FRCS
सह-प्राध्यापक / Associate Professor
मूत्ररोग विभाग एवं गुर्दा प्रत्यारोपण
Urology Department and Renal Transplantation
एम्स, साकेत नगर भोपाल-462020/AIIMS, Saket Nagar Bhopal-462020
ओपीडी दिन-मंगलवार/शुक्रवार / OPD Days-Tuesday/Friday

Dr. Snehil Gupta

Associate Professor

Department of Psychiatry, AIIMS, Bhopal

डॉ. स्नेहिल गुप्ता/Dr. SNEHIL GUPTA
Reg.No.DMC-78748
सह-प्राध्यापक/Associate Professor
M.D. Psychiatry (AIIMS Delhi), DNB
मनोचिकित्सा विभाग/Dept. of Psychiatry
एम्स, भोपाल/AIIMS, BHOPAL

Place: Bhopal

Date: 15/10/2024

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

DECLARATION

I hereby declare that the thesis entitled **" TO EVALUATE VARIOUS ETIOLOGIES OF CHRONIC ORCHIALGIA AND ITS RESPONSE TO MULTIMODAL THERAPY IN CENTRAL INDIA: A PROSPECTIVE OBSERVATIONAL STUDY ."** is a genuine and original work carried out by me under the guidance of **Dr. Devashish Kaushal**, Additional Professor and Head,Department of Urology. The thesis or any part thereof has not formed the basis for the award of any degree/fellowship or similar title to any candidate of any university to the best of my knowledge.

Dr. Dhirendra Yadav
Academic Senior Resident
Department of Urology
AIIMS, Bhopal

Dhirendra Yadav

Place: Bhopal

Date: 15/10/2024

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

CERTIFICATE

This is to certify that the thesis entitled **" TO EVALUATE VARIOUS ETIOLOGIES OF CHRONIC ORCHIALGIA AND ITS RESPONSE TO MULTIMODAL THERAPY IN CENTRAL INDIA: A PROSPECTIVE OBSERVATIONAL STUDY"** is a genuine research carried out by **Dr.Dhirendra Yadav**under the guidance and direct supervision of **Dr.Devashish Kaushal** (Additional Professor) in the Department of Urology.

Dr. Devashish Kaushal
Additional Professor and Head.
Department of Urology
AIIMS, Bhopal

डॉ.देवाशीष कौशल/Dr. Devashish Kaushal
एम.एस., एम.सी.एच. (यूरोलॉजी)/MS, MCh (Urology)
अतिरिक्त प्राध्यापक/Additional Professor
मूत्ररोग विभाग/Department of Urology
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

Place: Bhopal

Date: 15/10/2024

v

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

CERTIFICATE

This is to certify that the thesis entitled " **TO EVALUATE VARIOUS ETIOLOGIES OF CHRONIC ORCHIALGIA AND ITS RESPONSE TO MULTIMODAL THERAPY IN CENTRAL INDIA: A PROSPECTIVE OBSERVATIONAL STUDY**" is a genuine research carried out by **Dr.Dhirendra Yadav** under the guidance and direct supervision of **Dr. Devashish Kaushal,** Additional Professor and Head, Department of Urology, and Co-guides **Dr.Anuj Jain,** Additional Professor, Department of Anaesthesiology, AIIMS Bhopal, **Dr. Kumar Madhavan,** Associate Professor, Department of Urology, AIIMS Bhopal, **Dr. Snehil Gupta,** Associate Professor, Department of Psychiatry, AIIMS, Bhopal.

Dean (Academics)
AIIMS, Bhopal

Place: Bhopal
Date:15.10.2024

vi

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BHOPAL

COPYRIGHT DECLARATION

We hereby declare that **All India Institute of Medical Sciences, Bhopal**, shall have all the rights to preserve, use and disseminate this thesis in print or electronic format for academic/research purposes.

Dr. Dhirendra Yadav. Dhirendra Yadav

Academic Senior Resident

Department of Urology, AIIMS, Bhopal

Guide:

डॉ. देवाशीष कौशल/Dr. Devashish Kaushal
एम.एस., एम.सी.एच. (यूरोलॉजी)/MS, MCh (Urology)
अतिरिक्त प्राध्यापक/Additional Professor
मूत्ररोग विभाग/Department of Urology
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

Dr. Devashish Kaushal
Additional Professor and Head.
Department of Urology
AIIMS, Bhopal

Co-Guide:

डॉ. अनुज जैन/Dr. ANUJ JAIN
Reg.No.MP-16594 MD, PDCC
अतिरिक्त प्राध्यापक/Additional Professor
निश्चेतना विभाग/Dept. of Anaesthesiology
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

Dr.Anuj Jain
Additional Professor.
Department of Anaesthesiology, AIIMS, Bhopal.

Dr. KumarMadhavan
Associate Professor
Department of Urology, AIIMS, Bhopal

डॉ. कुमार माधवन / Dr. Kumar Madhavan
MBBS, MS, MCh, MRCS, FRCS
सह-प्राध्यापक / Associate Professor
मूत्ररोग विभाग एवं गुर्दा प्रत्यारोपण
Urology Department and Renal Transplantation
एम्स, साकेत नगर भोपाल-462020/AIIMS, Saket Nagar Bhopal-462020
ओपीडी दिन-मंगलवार/शुक्रवार / OPD Days-Tuesday/Friday

Dr. Snehil Gupta
Associate Professor
Department of Psychiatry, AIIMS, Bhopal

डॉ. स्नेहिल गुप्ता/Dr. SNEHIL GUPTA
Reg.No.DMC-78748
सह-प्राध्यापक/Associate Professor
M.D. Psychiatry (AIIMS Delhi), DNB
मनोचिकित्सा विभाग/Dept. of Psychiatry
एम्स, भोपाल/AIIMS, BHOPAL

Place: Bhopal
Date: 15/10/2024

vii

IHEC – LETTER OF PERMISSION

ALL INDIAINSTITUTE OF MEDICAL SCIENCES, BHOPAL
Saket Nagar, Bhopal – 462020 (M.P)
Institutional Human Ethics Committee- Student Research (IHEC-SR)
www.aiimsbhopal.edu.in Email: ihecsr@aiimsbhopal.edu.in

Ref Number:AIIMS/BPL/IHECSR/July/22/85/08 **Date:** 28th February 2023

Letter of Permission

Student Investigator: **Dr. Dhirendra Yadav** **Urology**	**Guide:** **Dr. Devashish Kaushal** **Urology** **Co-Guides:** **Dr Kumar Madhavan, Dr Anuj Jain, Dr Snehil Gupta**

AIIMS, Bhopal Institutional Human Ethics Committee- Student Research (IHEC-SR) in its 7th meeting held on 22nd February 2023 discussed your proposal titled **"To evaluate various etiologies of chronic orchialgia and its response to multimodal therapy in central India: A prospective observational study."** and evaluated it for suitability for your dissertation as required for fulfilment of DM/M.Ch program.

Following members attended the meeting:

1. Prof. D. K. Pal, Former HoD Community Medicine, GMC, Bhopal.....Chairperson
2. Prof. Rajnish Joshi, Professor of General Medicine, AIIMS, Bhopal.....Member
3. Prof. Amit Agrawal, Professor of Neurosurgery, AIIMS, Bhopal.....Member
4. Dr. Sunita Athawale, Professor of Anatomy, AIIMS, Bhopal.....Member
5. Dr. Girish Bhatt, Addl. Professor of Paediatrics, AIIMS, Bhopal.....Member
6. Dr. Ujjawal Khurana, Assoc. Professor of Pathology, AIIMS, Bhopal.....Member
7. Dr. Ankur Joshi, Assoc. Professor of CFM, AIIMS, Bhopal.....Member
8. Mr. Trivesh Goswami, Law Officer, AIIMS Bhopal.....Member
9. Dr. Shashank Purwar, Professor of Microbiology, AIIMS, Bhopal.....Member Secretary

The decision of the committee is as follows:

The AIIMS, Bhopal IHEC-SR approves your research protocol. All research related activities must begin only after the date of this approval. The validity of this approval is till two years from the date of issuance. Please submit a closure report / renewal request before expiration of the validity for this approval.

Shashank Purwar

Dr. Shashank Purwar
Member Secretary, AIIMS Bhopal IHEC-SR
Professor of Microbiology
AIIMS, Bhopal
Contact Number: 7773010099

Thesis Dr. DHIRENDRA YADAV (2200048M03S51007)

by Dr APJ Abdul Kalam Library

General metrics

85,706	11,972	834	47 min 53 sec	1 hr 32 min
characters	words	sentences	reading time	speaking time

Score

89

This text scores better than 89% of all texts checked by Grammarly

Writing Issues

391	173	218
Issues left	Critical	Advanced

Plagiarism

1 %

82 sources

1% of your text matches 82 sources on the web or in archives of academic publications

डॉ. देवाशीष कौशल/Dr. Devashish Kaushal
एम.एस., एम.सी.एच. (यूरोलॉजी)/MS, MCh (Urology)
अतिरिक्त प्राध्यापक/Additional Professor
मूत्ररोग विभाग/Department of Urology
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

Thesis Dr. DHIRENDRA YADAV (2200048M03S51007)

by Dr APJ Abdul Kalam Library

General metrics

20,137	2,834	169	11 min 20 sec	21 min 48 sec
characters	words	sentences	reading time	speaking time

Score

89

This text scores better than 89% of all texts checked by Grammarly

Writing Issues

99	32	67
Issues left	Critical	Advanced

Plagiarism

3 %

30 sources

3% of your text matches 30 sources on the web or in archives of academic publications

डॉ. देवाशीष कौशल/Dr. Devashish Kaushal
एम.एस., एम.सी.एच. (यूरोलॉजी)/MS, MCh (Urology)
अतिरिक्त प्राध्यापक/Additional Professor
मूत्ररोग विभाग/Department of Urology
अखिल भारतीय आयुर्विज्ञान संस्थान भोपाल-462020
All India Institute of Medical Sciences Bhopal-462020

ACKNOWLEDGEMENT

I would like to express my deepest gratitude and appreciation to the following individuals who have played a pivotal role in the successful completion of this thesis: First and foremost, I am immensely thankful to my thesis guide Dr. Devashish Kaushal (Additional Professor and Head, Urology), co-guides Dr. Anuj Jain, Additional Professor, Department of Anaesthesiology, Dr. Kumar Madhavan, Associate Professor, Department of Urology, AIIMS Bhopal, Dr. Snehil Gupta, Associate Professor, Department of Psychiatry, AIIMS, Bhopal for their unwavering guidance, support, and expertise throughout this research journey. Their insightful feedback, constructive criticism, and invaluable suggestions have shaped this work and enhanced its quality.

My appreciation extends to my family, whose constant encouragement, love, and belief in my abilities have driven my accomplishments. Their sacrifices and encouragement have provided me with the strength and resilience to overcome obstacles and pursue my academic aspirations. I am profoundly grateful for their constant presence and unwavering faith in me.

I am indebted to my friends and peers, Dr. Abhineeth KP, Dr. M R Viswas, Dr Sagar Yadav, Dr Sonu Kumar, Dr Udit Khurana, Dr. Amrut Phonde for their camaraderie, stimulating discussions, and encouragement. Finally, I would like to express my gratitude to all the participants of this project and individuals who generously contributed their time, expertise, and insights to this study. Without their cooperation and willingness to be a part of this research, this thesis would not have been possible.

In conclusion, the completion of this thesis has been made possible through the collective efforts and support of many individuals. I am truly humbled and grateful for the guidance, encouragement, and contributions of all those mentioned above. Your unwavering support and belief in my abilities have been an immense source of inspiration and have shaped my academic and personal development in profound ways.

Dr. Dhirendra Yadav

TABLE OF CONTENTS

Serial No.	Content	Page no.
1.	List of Tables	xii
2.	List of Figures	xiv
3.	List of Abbreviations	xvi
4.	Introduction	1
5.	Review of literature	7
6.	Aims and objectives	47
7.	Materials and methods	48
8.	Results	54
9.	Discussion	78
10.	Limitations and future prospects	90
11.	Conclusion	91
12.	Summary	93
13.	References	97
14.	Study proforma- Appendix 1	110
15.	Participant information sheet – English- Appendix 2	111
16.	Participant information sheet – Hindi- Appendix 3	112
17.	Participant Informed Consent Form- Appendix 4	113
18.	VAS score – Appendix 5	114
19.	Master Chart- Appendix 7	115

LIST OF TABLES

Table no.	Title	Page no.
1	Differential diagnosis of scrotal pain	25
1	Age wise distribution of study subjects (n=181)	70
2	Symptoms of chronic orchialgia in study subjects (n=181)	72
3	Duration of Symptoms in chronic orchialgia in study subjects (n=181)	73
4	Aetiology of chronic orchialgia in study subjects (n=181)	75
5	Pie chart shows the distribution of patients according to multiple etiologies	76
6	Pie chart shows the distribution of patients according to co-morbidity (DM, HTN, BPH)	77
7	Bar chart shows the mean VAS score at presentation and 3 months	78
8	Treatment modality in study subjects (n=181)	80
9	Surgical modality in study subjects (n=15)	81
10	Bar charts shows the mean VAS score in ≤40 years and >40 years age	82
11	Association of symptoms (unilateral vs bilateral) with VAS scores.	83

12	Bar charts shows the mean VAS score in duration of disease (≤6 months vs >6 months)	84
13	Bar charts shows the mean VAS score in marital status (unmarried vs married)	85
14	Bar charts shows the mean VAS score in BMI categories (BMI ≤22.9 kg/m² vs BMI ≥22.9 kg/m²)	86
15	Bar charts shows the mean VAS score in previous treatment or surgery	88
16	Bar charts shows the mean VAS score in presence of co-morbidities	90
17	Correlation between age, BMI and duration of disease and VAS score at presentation and 3 months	91
18	Binary Logistic Regression Analysis of Risk Factors for Moderate to Severe VAS Scores in Chronic Orchialgia Patients	92

LIST OF FIGURES

Figure	Title	Page no.
1	Chronic orchialgia	24
2	Diagnosis and work-up algorithm.	71
1	Age wise distribution of study subjects (n=181)	72
2	Symptoms of chronic orchialgia in study subjects (n=181)	74
3	Duration of Symptoms in chronic orchialgia in study subjects (n=181)	76
4	Aetiology of chronic orchialgia in study subjects (n=181)	76
5	Pie chart shows the distribution of patients according to multiple etiologies	77
6	Pie chart shows the distribution of patients according to co-morbidity (DM, HTN, BPH)	77
7	Bar chart shows the mean VAS score at presentation and 3 months	79
8	Treatment modality in study subjects (n=181)	80
9	Surgical modality in study subjects (n=15)	81
10	Bar charts shows the mean VAS score in ≤40 years and >40 years age	82
11	Association of symptoms (unilateral vs bilateral) with VAS scores.	83

12	Bar charts shows the mean VAS score in duration of disease (≤6 months vs >6 months)	84
13	Bar charts shows the mean VAS score in marital status (unmarried vs married)	85
14	Bar charts shows the mean VAS score in BMI categories (BMI ≤22.9 kg/m² vs BMI ≥22.9 kg/m²)	87
15	Bar charts shows the mean VAS score in previous treatment or surgery	89
16	Bar charts shows the mean VAS score in presence of co-morbidities	90

LIST OF ABBREVIATIONS

- **CBC** – Complete Blood Count
- **CI** – Confidence Interval
- **CO** – Chronic Orchialgia
- **CPPS** – Chronic Pelvic Pain Syndrome
- **CPS** – Chronic Pelvic Syndrome
- **CRP** – C-Reactive Protein
- **CT** – Computed Tomography
- **DN4** – Douleur Neuropathique 4 (Neuropathic Pain Questionnaire)
- **DRE** – Digital Rectal Examination
- **ED** – Erectile Dysfunction
- **EPS** – Expressed Prostatic Secretion
- **ESR** – Erythrocyte Sedimentation Rate
- **MoS** – Multimodal Therapy Strategy
- **MRI** – Magnetic Resonance Imaging
- **NRS** – Numeric Rating Scale
- **NSAIDs** – Non-Steroidal Anti-Inflammatory Drugs
- **PDE5i** – Phosphodiesterase Type 5 Inhibitors
- **PRF** – Pulsed Radiofrequency
- **PSA** – Prostate-Specific Antigen
- **QOL** – Quality of Life
- **RCT** – Randomized Controlled Trial
- **SD** – Standard Deviation
- **SGB** – Stellate Ganglion Block
- **SNRIs** – Serotonin-Norepinephrine Reuptake Inhibitors
- **SPSS** – Statistical Package for Social Sciences
- **SSRIs** – Selective Serotonin Reuptake Inhibitors
- **TENS** – Transcutaneous Electrical Nerve Stimulation
- **TRUS** – Transrectal Ultrasound
- **USG** – Ultrasonography
- **VAS** – Visual Analog Scale

INTRODUCTION

Chronic orchialgia, characterized by constant or intermittent testicular discomfort for more than three months, is a serious and sometimes disabling condition that affects the quality of life of those affected. Testicular pain can have a variety of etiologies, presents a particular difficulty due to its multiple causes and the complicated treatment of persistent discomfort. The condition is sometimes referred to as chronic scrotal pain. It includes not only testicular pain, but also discomfort associated with the epididymis, spermatic cord and adjacent paratesticular tissues.[1]

Chronic orchialgia is a condition that is frequently observed by urologists but is still poorly understood and researched. Despite its prevalence, particularly in men aged 20–40 years, there is a significant lack of thorough recommendations for the diagnosis and treatment of this condition. Chronic orchialgia affects a significant proportion of the male population and accounts for between 2.5 and 4.8% of consultations in urology clinics worldwide. The condition can have a significant impact on patients' physical and mental health, leading to reduced productivity, decreased sexual pleasure and a lower quality of life.[2-4]

The etiology of persistent orchialgia is often complex. Possible causes include varicocele, epididymitis, infection, trauma and problems arising from procedures such as vasectomy or hernia repair. Although there are recognized causes in some cases, up to 50% of chronic orchialgia is thought to be idiopathic, with no identifiable cause.[5,6] This presents a diagnostic and

therapeutic difficulty for physicians, as idiopathic patients often require a trial-and-error approach to determine the most successful treatment techniques.

Neuropathic pain is now recognized as an essential element of chronic orchialgia. Neuropathic pain is the result of nerve damage or dysfunction and causes persistent pain long after the primary injury has resolved. Central sensitization, a phenomenon in which the nervous system becomes more responsive to stimuli, has been linked to the occurrence of persistent pain in orchialgia. This can lead to increased sensitivity to pain, spontaneous nerve activation and pain felt in the absence of noxious stimuli. The complicated interplay of nociceptive and neuropathic pain in chronic orchialgia emphasizes the need for multimodal therapeutic strategies that target the many underlying processes.[7,8]

Chronic orchialgia requires a thorough examination to rule out clinically important diseases such as testicular torsion, neoplasms or infections. The conventional method of diagnosis includes a comprehensive history, physical examination and imaging procedures, including an ultrasound examination of the scrotum to rule out varicocele, hydrocele or other anatomical irregularities. Complementary diagnostic procedures such as spermatic cord block or MRI may be used if nerve entrapment or referred pain is suspected. Despite advances in diagnostic imaging, the cause of the pain sometimes remains unclear, especially in idiopathic cases, which complicates treatment efforts.[9-12]

Due to the many causes and manifestations of chronic orchialgia, a multimodal treatment strategy is required. Treatment often begins with conservative therapy, which includes non-steroidal anti-inflammatory drugs (NSAIDs), scrotal support, antibiotics (in case of infection) and neuropathic pain medications such as tricyclic antidepressants or anticonvulsants.[13] Neuropathic pain medications, such as amitriptyline and pregabalin, are often used to relieve nerve-related pain. When conservative therapy is ineffective, surgical treatments may be considered, especially for those with varicocele, hydrocele, hernia or other changeable anatomical abnormalities. Surgical procedures include varicocelectomy, eversion so sac or hernioplasty, depending on the cause of the symptoms.[14]

Microsurgical denervation of the spermatic cord (MSCD) has become a viable surgical alternative for people suffering from persistent pain that does not respond to pharmacological treatment. MSCD aims to disrupt the neural connections that transmit pain signals from the testicular area while preserving testicular functionality. Research suggests that MSCD can provide significant pain relief in a substantial percentage of patients, with success rates ranging from 70 to 85%.[15,16] Nevertheless, the surgery carries risks and not all patients receive complete pain relief, particularly in cases of central sensitization or nerve injury that spreads beyond the localized testicular area.

Recent advancements in the comprehension of chronic pain processes have underscored the need of treating both the physical and psychological dimensions of chronic orchialgia. Psychological elements, including anxiety,

despair, and stress, may intensify the feeling of pain and facilitate its persistence. A comprehensive therapy strategy, including psychiatric counseling and pain control techniques like nerve blocks or pulse radiofrequency therapy, may be advantageous for some individuals.[17,18] Multidisciplinary care, including urologists, pain specialists, and mental health experts, is widely acknowledged as an essential element of successful therapy for persistent orchialgia.

The financial and emotional difficulties linked to persistent orchialgia are substantial. The illness often necessitates many healthcare appointments, diagnostic evaluations, and treatments, resulting in elevated healthcare expenses.[19] Furthermore, the effects on job productivity and interpersonal relationships may be significant, especially for those at the peak of their reproductive and professional careers. The chronic nature of the ailment and the absence of a clear solution exacerbate emotions of frustration and helplessness in patients, intensifying their psychological suffering.

Not with standing the limitations, there exists optimism for improving the diagnosis and therapy of chronic orchialgia. Continued investigation into the etiology of chronic pain, together with improvements in surgical methodologies and pain management strategies, presents the possibility of enhanced results.[20] Further research is necessary to comprehensively elucidate the underlying causes of chronic orchialgia and to provide standardized treatment protocols applicable in clinical practice. Furthermore, geographical disparities in the incidence and etiology of chronic orchialgia indicate the need for

population-specific research to customize treatment strategies according to local healthcare requirements.

Need of the study

Chronic orchialgia is a vexing condition that significantly reduces patients' quality of life and is often not treated effectively due to its multiple causes. Although it affects a significant percentage of men, especially during their fertile and working years, there are no standardized diagnostic and treatment techniques. This research aims to fill this gap by examining the prevalence, etiology and efficacy of different treatment modalities for persistent orchialgia. The results will lead to a better understanding of regional variations and help clinicians develop more effective, multimodal treatment approaches to improve patient outcomes and reduce persistent distress.

Statement of the problem

Chronic orchialgia remains a difficult urological condition for which there are no universally recognized diagnostic and treatment protocols. Patients often suffer from chronic pain, repeated visits to the doctor and variable treatment outcomes, resulting in a significant physical, psychological and financial burden. Chronic orchialgia mainly presents in working male population which not only impact them medically but also financially by poor occupational performance.

Prevalence of various etiologies of chronic orchialgia varies from geographic regions. The prevalence study of chronic orchialgia will help clinicians to determine various factors associated with etiologies of chronic orchialgia and

how to prevent them. Various treatment modalaties and their efficacies will help clinicians to make adequate treatment plan.

A large number of cases are idiopathic, making diagnosis and treatment difficult. Despite advances in pain management and surgical methods, effective solutions for the treatment of persistent orchialgia remain unclear. This study is a multimodal treatment study involving psychiatrist and pain clinic with the urologist. We studied the impact of multimodule therapy in such a complex disease treatment.

The aim of this study is to investigate the prevalence, etiologic variables and effectiveness of multimodal therapy in the treatment of chronic orchialgia in order to formulate a more systematic and efficient strategy for patient care.

REVIEW OF LITERATURE

Chronic orchialgia is one of the most vexing urologic complaints due to the relative dearth of information regarding proper evaluation and management of many of its causes. Currently, the American Urological Association (AUA) and European Urological Association (EAU) provide no formal guidelines for the diagnosis, evaluation, and management of chronic orchialgia.[21] Chronic pelvic pain syndromes more generally have been better characterized and studied in women than in men.[21] Chronic pelvic pain affects approximately 15% of women 18–50 years old.[22] In contrast, a recent study of 900 Swedish men estimated that chronic pelvic pain only affects 3–5% of men 40–69 years old.[23] The differential diagnosis of chronic pelvic pain includes scrotal and testicular pain. Zermann observed that 38.8% of cases of chronic pelvic pain in men localize to the scrotum.[24] A Swedish study that surveyed how urologists treat chronic scrotal pain estimated that 2.5% of visits are for chronic scrotal pain, given that urologists on average self-reported 6.5 new patient visits with a primary diagnosis of chronic scrotal pain monthly.[25] A more recent study observed chronic scrotal pain in 4.8% (113/2,375) of men who presented to an outpatient urologist.[26] Yet, before management and treatment can be pursued to help men suffering from this condition, a thorough understanding of its etiologies, evaluation and management are needed. In this review, we present a contemporary understanding of the various etiologies, diagnosis, and evaluation of chronic orchialgia along with its response to multimodal treatment strategy.

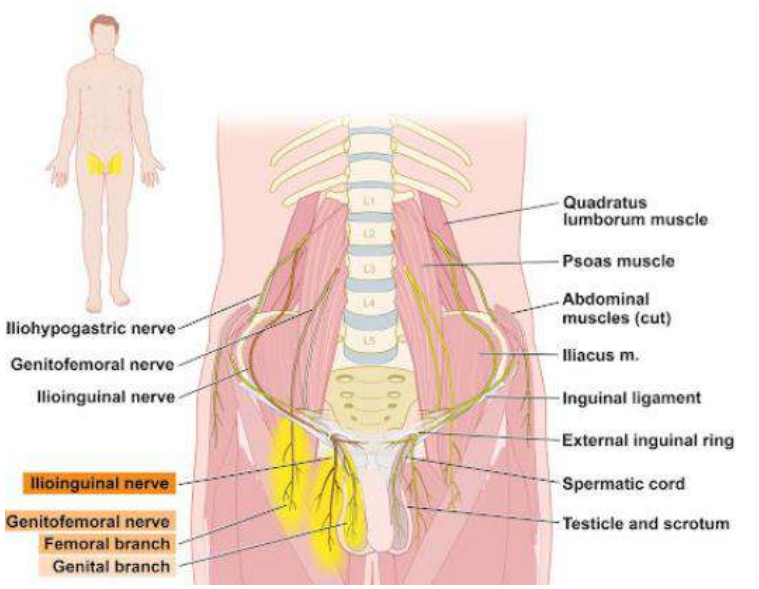


Figure 1. Chronic orchialgia

Chronic orchialgia is defined as constant or intermittent scrotal pain lasting at least three months that significantly interferes with the patient's daily activities.[27] Of note, more recent definitions state that chronic ochialgia encompasses not just pain localized to the testicle, but also pain localizing to the epididymis, paratesticular structures, and spermatic cord.[9] A broad differential diagnosis for chronic orchialgia includes both chronic and unresolved acute etiologies of testicular pain including epididymitis, testicular torsion, tumors, obstruction, varicocele, epididymal cysts, hydrocele, iatrogenic injury following vasectomy or hernia repair, and referred pain from a variety of sources such as a mid-ureteral stone, indirect inguinal hernia, aortic or common iliac artery aneurysms, lower back disorders, interstitial cystitis and nerve entrapment due to perineural fibrosis.[9] Psychological factors contributing to genital pain should also be considered as a possible etiology for chronic orchialgia.[28] Schover observed that in 48 men with no defined organic etiology for their scrotal pain, many had psychological symptoms including somatization

disorder (56%), non-genital chronic pain syndromes (50%), major depression (27%), and chemical dependency (27%). These men also reported low levels of social support mechanisms, with 33% feeling isolated and only 50% having a spouse.[29]

Differential diagnosis of scrotal pain:[30-39]

Etiology	Epidemiology	History	Physical exam	Labs/imaging
Acute				
Epididymitis	600,000 cases in United States with bimodal distribution in men 16–30 and 51–70 years old with highest incidence	Gradual onset of unilateral pain with symptoms of urinary tract infection and history of sexual activity	Swelling of epididymis with exquisite tenderness; normal cremasteric reflex and pain relief with scrotal elevation	urinalysis and urethral culture along with Doppler U/S showing increased blood flow
Testicular torsion	Bimodal peak in adolescence and in neonatale period	Acute onset of unilateral testicular pain	High riding testis with abnormal cremasteric reflex; pain with testis elevation	Doppler U/S showing decreased blood flow
Chronic				
Testicular mass	Most common in young males average age 32 years old	Range from painless to dull ache, acute pain possible but uncommon	Mass palpated on exam	U/S to determine intra *vs.* extra-testicular mass

Varicocele	2-10% prevalence in the general population of adult men	Dull aching, throbbing pain worsened by standing, straining, or increased activity	"Bag of worms" on palpation	Color Doppler showing spermatic vein diameter >3.0–3.5 mm in diameter with demonstration of retrograde flow with Valsalva
Spermatocele	Increased frequency observed in sons of mothers who used DES and in patients with VHL	Usually asymptomatic	Smooth, round and usually small transilluminating mass on the epididymis	U/S can be helpful if not clear on physical exam
Hydrocele	1–2% of neonates	Swelling of scrotal sac often bilateral, usually non painful although pain may occur with distention	Transilluminating mass	U/S helpful is testes not palpable
Post-vasectomy pain	6% of men seek medical advice within 3–4 years	Scrotal discomfort, history of vasectomy	Tender full epididymitis and tender vasectomy sites	None

	vasectomy for chronic testicular pain		nodule	
Post-hernia repair pain	roughly equal amount of patients (~15%) with testicular pain at 5-year follow-up regardless of surgical approach	Burning or stabbing pain with changes in sensation, worsened by activity	Normal genital exam	None
Interstitial cystitis	Self-report studies estimate 60 cases per 100,000 men; Medical billing data describe 41 cases per 100,000 men	Suprapubic pain, pain may include lower back	Variable tenderness of the abdominal wall, hip girdle, pelvic floor, bladder base, and urethra	Urinalysis, urine culture, and post void residual volume
Pelvic floor dysfunction	4.4% of men with urinary symptoms of dysfunction and up to 6.8% with defecation symptoms	Complaints of micturition, defecation, sexual function, and pelvic floor pain	Tenderness of pelvic floor in rectal exam	urine analysis and urine culture

Pain referred from				
Mid-ureteral stone	Unusual presentation presented in case reports	Colicky unilateral pain	Normal genital exam	Urinalysis to assess for blood, abdominal X-ray
Indirect inguinal hernia	Unusual presentation presented in case reports	Severe unilateral pain	Hernia noted on exam	Ultrasound to assess for decreased blood flow to testicle
Aortic or common iliac artery aneurysms	Unusual presentation presented in case reports	Abdominal crampy pain radiating to testicle; may be constant or intermittent	Normal genital exam	CT or U/S to reveal aneurysm
Lower back disorders	Unusual presentation presented in case reports	Unilateral scrotal pain worsened with coughing and leaning forward	Normal genital exam, straight leg raise aggravates pain, normal neuro exam	MRI spine

Despite the numerous possible causes of chronic orchialgia, 25–50% of chronic orchialgia is currently considered idiopathic. It has been hypothesized that neurogenic inflammation elicited by activation of unmyelinated sensory neurons through noxious stimuli resulting in release of neuropeptides such as substance

P and calcitonin gene related peptide (CGRP) are related to the pain. Specifically, this inflammation may be mediated by changes in alpha-2 receptors, given that such receptors with a lower response to alpha-2 antagonists have been identified in men with chronic scrotal pain.[40] Most men with chronic orchialgia are in their mid to late 30s, although the condition can occur from adolescence to old age.[41,42] Conditions associated with chronic orchialgia include infertility (9.7%), varicocele (8.8%), mid and distal ureteral stones (7.1%), chronic prostatitis (5.3%), lumber pain (4.4%), stress (4.4%), epididymal cysts (4.4%), irritable bowel (4.4%), infection (3.5%), previous operation (2.7%), driving (2.7%), hernia (2.7%), and hydrocele (1.8%) according to a study of 2,375 men meeting criteria for chronic scrotal pain.[26]

Diagnosis and evaluation:

Diagnosis and evaluation of chronic orchialgia should be directed towards the differential diagnosis of acute testicular pain, with chronic orchialgia considered a diagnosis of exclusion.[32] The initial workup consists of a thorough history and physical exam to rule out other possible causes of testicular pain of prolonged duration. The physician should consider intermittent torsion, infection, masses, varicocele, other comorbidities and past surgical history in establishing a definitive cause for the patient’s chronic pain.

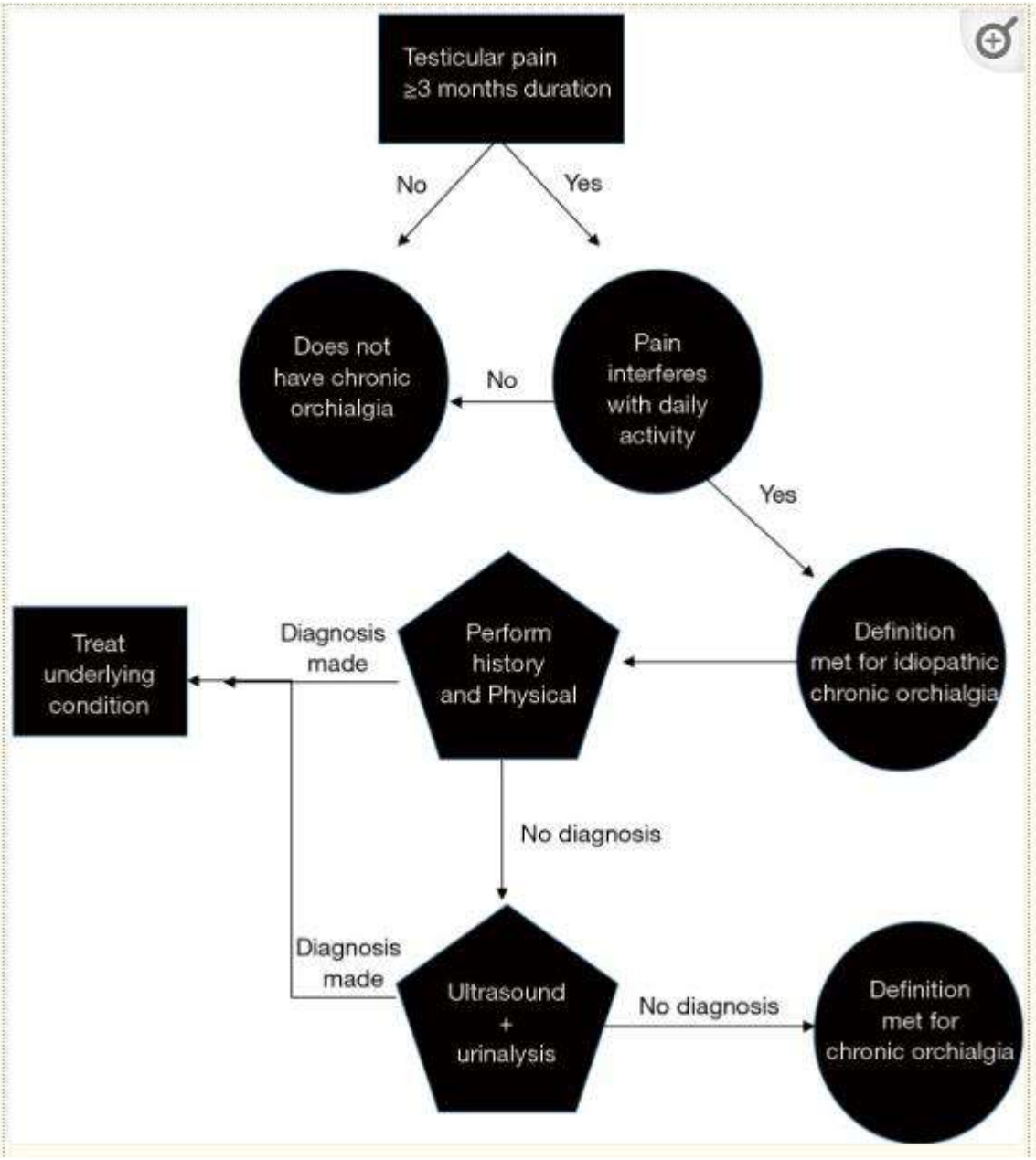


Figure 2. Diagnosis and work-up algorithm.

The patient history should also elicit details of the pain including acuity of onset, severity, location, quality, timing, and radiation to other locations. Aggravating and alleviating factors should be discussed as well, with emphasis on urinary habits, bowel movements, and sexual and physical activities.[32] For example, acuity of pain onset may help differentiate between acute pathology such as testicular torsion or infection and more chronic pathology such as testicular mass or painful varicocele. Asking about other locations where pain may be present and radiation of the pain can also be useful, given that lower back disorders, mid-ureteral stones, aortic aneurysms, and indirect inguinal hernias can all contribute to scrotal pain. In men with interstitial cystitis, location of pain is of importance as suprapubic pain is usually present. Also, relief of pain with voiding and discomfort with bladder filling would be characteristic and the history should elucidate this relationship.[36]

Recent studies suggest that referred pelvic floor pain that may be due to a painful condition or pelvic floor weakness may play a role in chronic orchialgia. In 2010, 41 men with chronic testicular pain were evaluated by Planken *et al.* for pelvic floor dysfunction. The authors found 93% of the 41 men had at least 1 symptom of pelvic floor dysfunction. In subsequent pelvic floor testing using electromyography registration, 88% of patients had increased resting pelvic floor muscle tone with mean of 6.7 mV (normal <3.0 mV). Men with a normal resting pelvic floor tone were significantly older than those with an increased resting tone (65.6 *vs.* 45.6 years, P=0.0001) which supported the possibility of pelvic floor dysfunction in younger men with chronic orchialgia.[37] A 2016 study

by Farrell *et al.* further supported these findings by showing that men with chronic scrotal pain who also had pelvic floor pain and/or tightness on digital rectal examination could have improvement in scrotal pain with physical therapy of the pelvic floor muscles. Thirty patients were followed for a median of 13 months (range, 3-48 months). Median pre-physical therapy pain score was 6/10. After a mean of 12 [interquartile range (IQR), 6–16] sessions, the median decrease in pain score was 4.5/10. Further, fewer men required analgesic medication after physical therapy (44.0% *vs.* 73.3%, P=0.03).[38]

Chronic orchialgia can therefore be classified as part of the spectrum of chronic pelvic pain syndromes in men, and specific questions about sexual health and abuse are important given that men with chronic pelvic pain have an increased risk [odds ratio (OR) of 1.7–3.3] of having experienced psychological, physical, and sexual abuse.[43] A thorough sexual history and history of abuse may also help identify risk factors for epididymitis in addition to psychological factors that may play into chronic pain. If a psychological component to the pain is suspected the history should include assessment of psychiatric history, substance use and/or abuse, and support structures, as men with idiopathic chronic scrotal pain often have numerous psychological risk factors that may contribute to a psychological etiology.[29]

A thorough physical examination of the genitalia, with emphasis on the scrotal contents including the epididymides and vasa deferentia, and a rectal exam should be performed with the goal of ruling out all potential sources of pain.[15]

Laboratory examinations include urinalysis and possibly semen culture if an infectious etiology is suspected.[8] A duplex Doppler scrotal ultrasound should be performed to rule out structural abnormalities.[44] A study by Costabile found that ultrasound is the only diagnostic test with a significant rate of abnormal findings in patients with chronic orchialgia. Other evaluation modalities, such as CT scans, cystoscopy, urinalysis and culture, urodynamics, and excretory urography, were normal in more than 91% of cases. However, a physical exam remains useful in patients with chronic pain without associated swelling. A study by Lau et al. found a sensitivity of 71.4% for physical exam in identifying scrotal pathology, and a specificity of 90.9%. The study suggests that while ultrasound is highly useful in chronic orchialgia, its utility is rivaled by a good physical exam in patients with chronic testicular pain without obvious scrotal swelling. Therefore, idiopathic chronic orchialgia should be high on the differential diagnosis in patients with a history of other possible causes of orchialgia and a benign physical exam.[45]

Invasive testing and other imaging modalities including CT scan, intravenous pyelogram (IVP), retrograde pyelography, voiding cystourethrogram (VCUG) and cystoscopy are not helpful in working up chronic orchialgia and are not currently recommended as a part of the work-up. When initial work-up for chronic orchialgia results in no organic etiology a reasonable next step is spermatic cord nerve block with bupivacaine. Successful pain relief with spermatic cord blockade is helpful in both diagnosis of chronic orchialgia and in

determining whether microsurgical spermatic cord denervation will be effective as a treatment.[46-48]

Impact of Chronic Orchialgia on Quality of Life

Chronic orchialgia, a persistent testicular pain lasting over three months, significantly impacts a patient's life by affecting their emotional, social, sexual, and psychological well-being. The condition can be debilitating and distressing, especially when resistant to treatment, leading to a reduction in overall quality of life. The multifaceted impact of chronic orchialgia is highlighted by the complex interplay between physical, psychological, and social factors.[49]

Physical Impact

The physical pain associated with chronic orchialgia is often described as a dull ache, sharp pain, or discomfort in the testicles, groin, or lower abdomen. The intensity of the pain can vary from mild to severe, with some patients experiencing intermittent discomfort while others suffer from continuous, debilitating pain. This persistent pain has far-reaching physical consequences.

- **Reduced Physical Activity**: Patients with chronic orchialgia often limit their physical activities to avoid exacerbating their pain. Activities such as exercise, heavy lifting, walking, or even sitting for long periods can aggravate the condition, leading to reduced mobility and physical fitness. For some, this results in weight gain, muscle atrophy, and a general decline in health. The inability to engage in normal physical activities can

also impact work performance and daily responsibilities, contributing to further frustration and isolation.

- **Sleep Disruption**: Chronic pain often interferes with sleep, and chronic orchialgia is no exception. The pain may worsen at night or disturb sleep patterns, leading to insomnia or fragmented sleep. Sleep deprivation, in turn, exacerbates the perception of pain, creating a vicious cycle that further diminishes quality of life. Fatigue resulting from poor sleep can impair cognitive function, decision-making, and emotional stability, making it difficult for patients to cope with their condition.[50]

Psychological and Emotional Impact

Chronic orchialgia, despite multiple treatments, can significantly impact mental health due to ongoing pain, diagnosis uncertainty, and frustration with ineffective therapies, leading to significant psychological distress.

- **Anxiety and Depression**: Studies have shown that chronic pain is closely associated with mental health disorders such as anxiety and depression. Patients with chronic orchialgia often experience fear and anxiety about their condition, particularly concerning the possibility of underlying malignancy or infertility. When diagnostic tests fail to identify a clear cause for the pain, this anxiety can worsen, contributing to feelings of helplessness and despair. Furthermore, the unpredictability of the pain, coupled with its interference in daily life, often leads to a sense of loss of control, which can trigger depressive symptoms.[51]

- **Chronic Stress**: The constant presence of pain, along with the frustration of dealing with a condition that often lacks a clear etiology, can result in chronic stress. This stress has both emotional and physiological consequences, potentially worsening the pain itself. Chronic stress increases the body's production of stress hormones such as cortisol, which can amplify pain perception and increase inflammation. Moreover, stress can contribute to the development of other chronic conditions, such as hypertension or gastrointestinal problems, further complicating the patient's health.
- **Cognitive Effects**: The mental burden of living with chronic pain can impair cognitive function. Patients may experience difficulty concentrating, memory problems, and reduced mental clarity, often referred to as "brain fog." These cognitive effects can diminish productivity at work or school and interfere with personal relationships, further straining the patient's emotional well-being.[52]

Impact on Sexual Health

One of the most profound effects of chronic orchialgia is on sexual health, which is closely tied to a man's sense of identity, self-esteem, and overall well-being.

- **Decreased Libido**: The physical pain and discomfort associated with chronic orchialgia can reduce sexual desire or libido. Pain during sexual activity or ejaculation, known as dyspareunia, can make sexual experiences unpleasant or even intolerable. Over time, patients may develop an aversion to sexual activity due to the anticipation of pain,

leading to a decreased interest in sex. This can create tension in intimate relationships and negatively impact emotional bonds between partners.

- **Erectile Dysfunction (ED)**: Chronic orchialgia has been associated with an increased risk of erectile dysfunction, particularly when there is an underlying psychological component such as anxiety or depression. The stress and worry surrounding the pain, combined with the physical discomfort, can interfere with sexual arousal and performance. Erectile dysfunction, in turn, can further exacerbate emotional distress, creating a cycle of sexual dysfunction and psychological strain.
- **Fertility Concerns**: Although chronic orchialgia itself does not directly cause infertility, patients often worry about the impact of their condition on fertility, particularly if their pain is associated with conditions like varicocele, infection, or previous surgical interventions such as vasectomy. The fear of infertility can add an additional layer of emotional stress and anxiety, particularly for younger men or those who are planning to start a family.[53,54]

Social Impact

The social consequences of chronic orchialgia can be significant, affecting relationships, social interactions, and participation in community or recreational activities.

- **Strain on Relationships**: Chronic pain can be isolating, and men with chronic orchialgia often find it difficult to communicate their experiences to others, including their partners, family, and friends. The inability to fully participate in social activities, combined with the emotional toll of chronic pain, can lead to feelings of isolation and withdrawal. For married or cohabitating individuals, the condition can strain intimate relationships, particularly if sexual function is impaired or if the patient's mood and energy levels are consistently low. Partners may feel helpless, frustrated, or disconnected, particularly if they struggle to understand the patient's pain.
- **Impact on Employment**: Chronic orchialgia can interfere with a patient's ability to work, particularly in physically demanding jobs. Persistent pain may reduce productivity, increase absenteeism, and make it difficult for patients to focus on tasks. This can lead to job insecurity, financial stress, and decreased self-worth, particularly if the patient is unable to work for extended periods. In some cases, patients may face challenges in explaining their condition to employers, given the personal and sensitive nature of the symptoms.
- **Reduced Social Engagement**: The constant presence of pain, coupled with the emotional and psychological toll, often leads to reduced engagement in social and recreational activities. Patients may avoid gatherings, sports, or other leisure activities due to discomfort or fear of

exacerbating their pain. Over time, this withdrawal can lead to a sense of isolation, loneliness, and diminished quality of life.[55,56]

Financial Impact

Chronic orchialgia, like many chronic pain conditions, can result in substantial healthcare costs for patients. The condition often requires repeated visits to healthcare providers, including urologists, pain specialists, physiotherapists, and mental health professionals. Diagnostic tests, treatments, medications, and even surgical interventions may be necessary to manage the condition, leading to significant out-of-pocket expenses. For patients who are unable to work due to their pain, the financial strain can be even greater, compounding the emotional and social impact of the condition.

Coping Strategies and Quality of Life

Despite the challenges posed by chronic orchialgia, patients can adopt various coping strategies to improve their quality of life. Multimodal therapy, which combines medical, psychological, and physical interventions, has shown promise in managing chronic orchialgia. Psychological therapies such as cognitive-behavioral therapy (CBT) can help patients cope with the emotional distress of chronic pain and reduce pain-related catastrophizing. Physical therapies, including pelvic floor rehabilitation and nerve blocks, may alleviate pain and improve physical function.

Support from family, friends, and healthcare providers is also critical in helping patients manage the condition. Encouraging open communication about the impact of chronic orchialgia can reduce feelings of isolation and improve

relationships. In some cases, support groups or online communities for individuals with chronic pain can provide emotional support and practical advice for managing the condition.

Chronic orchialgia significantly impacts a patient's quality of life, affecting physical, psychological, sexual, social, and financial well-being. The persistent pain and emotional toll can reduce a patient's ability to function and enjoy life. Multidisciplinary approaches are crucial for managing the condition and improving overall quality of life. As research on chronic pain evolves, a better understanding may lead to more effective treatments and improved patient outcomes.[57]

Treatment Modalities for Chronic Orchialgia

Treatment of this problem remains a therapeutic dilemma. It should start with simple noninvasive and nontoxic approaches including non-steroidal anti-inflammatory drugs (NSAIDs) and antibiotics, particularly when there is evidence of infection. Doxycycline and quinolones are best, as they appear to have the highest penetration into these structures and may be given up to 4 weeks if indicated. Other oral agents include antidepressants, such as amitriptyline 10–25 mg qhs or nortriptyline 10–150 mg daily may be used, which inhibit norepinephrine release at first- and second-order neurons, or anticonvulsants such as gabapentin, starting at 300 mg but titrating up to 3600 mg daily or pregabalin 75 to 150 mg daily. This drug works as a calcium channel modulator in the central nervous system to reduce neuropathic pain. A

recent review by Sinclair and colleagues demonstrated little benefit with these drugs for post vasectomy pain.[58] Nerve blocks as a single injection or in a series have also been used as a form of treatment with or without steroids in an effort to break the pain cycle. A recently introduced form of noninvasive treatment is known as TMR, which is a delivery system for focused, painless, topical, high-intensity pulsed electromagnetic energy, which is receiving increased attention and is currently being studied with encouraging initial results. The problem is, when these nonsurgical approaches fail, no unanimous approach has been established. Psychological counseling may be beneficial to help the patient deal with the pain, but when this fails surgery is frequently the next option.

Epididymectomy is recommended for pain localized to the epididymis and has the best outcomes after vasectomy. Success rates range from 10% to 80%.[59] However, multiple case series have shown poor results with epididymectomy for chronic orchialgia treatment. Vasectomy reversal is offered as an open-ended procedure or with vasovasostomy.[60] The largest report on vasovasostomy for chronic pain was presented at the 2010 AUA meeting, showing 75% complete relief, 10% partial relief, and 10% failure.[61] Reports on vasectomy reversal are limited and with small cohorts, but show pain relief in the 69-84% range. It is costly and does not undo the sterilization process.[62] Microdenervation of the spermatic cord (MDSC) is a procedure that divides structures carrying neural fibers while preserving arteries, lymphatics, and vas deferens. The procedure has gained attention due to several articles published

over the past decade. The primary advantage is sparing the testicle for psychological and physiological reasons. Informed consent is crucial for this procedure, as the pain may be persistent but rarely worse.[63-65] There is also a risk of hematoma, hydrocele, testicular atrophy, and hypogonadism. The first case report was in 1978.[66]

Conservative Management

For many patients, conservative or non-invasive therapies are the first line of treatment for chronic orchialgia, particularly when no specific pathology is identified. These therapies aim to manage symptoms, reduce pain, and improve quality of life without the need for invasive interventions.

- **Rest and Activity Modification**: Patients are often advised to avoid activities that exacerbate their pain, such as heavy lifting, prolonged standing, or high-impact exercise. Rest and modifications to daily routines can help alleviate discomfort in the early stages of treatment. Some patients may also benefit from wearing scrotal support garments, such as athletic supporters, to reduce tension on the testicles.
- **Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)**: Urologists often include NSAIDs as the first-line pharmacotherapy for chronic scrotal pain syndrome (CSPS), with 92% of patients receiving NSAID therapy. NSAIDs have well-established analgesic and anti-inflammatory properties, making them a simple first-choice for treating CSPS, especially when combined with non-pharmacologic therapy like

supportive undergarments or heat/cold pack application. NSAIDs like ibuprofen and naproxen are commonly prescribed to reduce inflammation and provide pain relief, and are often the first pharmacological intervention used to manage chronic orchialgia. However, they are less effective for severe cases or neuropathic pain, and long-term use can carry risks such as gastrointestinal irritation, kidney damage, and cardiovascular issues.[67]

- **Oral Analgesics**: For patients with more severe pain, oral analgesics, including opioids, may be prescribed. However, opioids are typically used with caution due to the risk of dependence, tolerance, and side effects such as constipation and drowsiness. The long-term use of opioids for chronic orchialgia is generally discouraged, and their use is reserved for cases where other treatments have failed.
- **Antidepressants and Anticonvulsants**: Neuropathic pain, which involves damage or dysfunction of nerves, can be a significant component of chronic orchialgia. In such cases, medications like tricyclic antidepressants (e.g., amitriptyline) and anticonvulsants (e.g., gabapentin, pregabalin) may be effective. These drugs alter the perception of pain by modulating nerve signals, helping to reduce the severity and frequency of testicular pain. They are particularly useful when traditional analgesics fail to provide adequate relief.

Physical Therapy and Pelvic Floor Rehabilitation

Chronic orchialgia may be linked to musculoskeletal issues, such as pelvic floor dysfunction or myofascial pain syndrome, where muscle tension or trigger points in the pelvic region contribute to testicular pain. Physical therapy and pelvic floor rehabilitation are therefore key components of treatment for many patients.

- **Pelvic Floor Physical Therapy**: Specialized physical therapists trained in pelvic floor rehabilitation can help patients release tension in the pelvic muscles, improve flexibility, and strengthen weak muscles. Techniques such as manual therapy, stretching, and biofeedback are used to treat musculoskeletal causes of orchialgia. For some patients, these therapies can provide significant and lasting relief, especially when combined with other treatments.
- **Trigger Point Therapy**: In cases where myofascial pain is identified, trigger point injections or dry needling can be used to deactivate painful muscle knots in the pelvic region. This treatment targets the underlying cause of the referred pain and may be particularly effective when physical therapy alone is insufficient.

Nerve Block Injections

Chronic orchialgia can sometimes be attributed to nerve damage or irritation, leading to neuropathic pain. In such cases, nerve blocks may be employed to provide relief by interrupting pain signals.

- **Ilioinguinal and Genitofemoral Nerve Blocks**: These nerve blocks involve the injection of anesthetic agents, often combined with corticosteroids, near the ilioinguinal and genitofemoral nerves, which supply sensation to the testicles and surrounding areas. Nerve blocks can provide temporary or long-term pain relief for patients with neuropathic orchialgia. However, the effectiveness of nerve blocks varies, and repeat injections may be necessary if the pain recurs.
- **Spermatic Cord Block (Cord Block)**: A spermatic cord block involves injecting an anesthetic into the spermatic cord to relieve testicular pain. This procedure can be diagnostic as well as therapeutic, helping to determine whether the pain is originating from the structures within the cord. For some patients, a spermatic cord block provides immediate and lasting relief, while others may require multiple treatments or further interventions.

Minimally Invasive Surgical Interventions

When conservative treatments fail, minimally invasive surgical options may be considered. These procedures target specific anatomical structures contributing to the pain and are typically performed after thorough diagnostic evaluations.

- **Microsurgical Denervation of the Spermatic Cord**: Microsurgical denervation is a procedure in which the sensory nerves of the spermatic cord are severed to eliminate pain. This procedure has been shown to provide significant relief in patients with chronic orchialgia, particularly when the pain is localized to the testicle and unresponsive to non-surgical

treatments. Microsurgical techniques allow for precise targeting of the nerves, minimizing the risk of complications and preserving important structures such as the blood vessels and vas deferens. Studies have reported success rates as high as 70-80%, making this a viable option for refractory cases of orchialgia.

- **Varicocele Repair**: For patients with chronic orchialgia due to varicocele (enlargement of the veins within the scrotum), surgical repair may be recommended. Varicocele repair can be performed through open surgery, laparoscopy, or percutaneous embolization, with the goal of relieving pressure on the testicle and improving blood flow. Success rates vary depending on the severity of the varicocele and the surgical technique used, but many patients report significant pain relief following the procedure.

More Extensive Surgical Options

In cases where less invasive treatments fail, more extensive surgical options may be considered. These procedures are typically reserved for the most severe cases of chronic orchialgia, particularly when the pain is refractory to all other interventions.

- **Orchiectomy**: Orchiectomy, or surgical removal of the testicle, is considered a last resort for chronic orchialgia. This drastic measure is usually only performed when the pain is unrelenting and all other treatments, including nerve blocks and microsurgical denervation, have failed. Orchiectomy can provide definitive relief from testicular pain, but it

carries significant psychological and physical consequences, particularly for younger men concerned about body image, fertility, and hormonal changes. Some patients may experience phantom pain (pain perceived in the area of the missing testicle) following the procedure, making the decision to undergo orchiectomy a complex one.[68]

Psychological and Behavioral Therapies

Given the strong link between chronic pain and mental health, psychological and behavioral therapies play an important role in managing chronic orchialgia, especially in cases where pain persists despite medical or surgical interventions.

- **Cognitive Behavioral Therapy (CBT)**: CBT helps patients develop coping strategies for managing chronic pain by changing negative thought patterns and behaviors. This type of therapy can reduce the emotional burden of chronic orchialgia, decrease pain-related catastrophizing, and improve overall quality of life. CBT has been shown to be effective for a wide range of chronic pain conditions, including orchialgia, particularly when used in conjunction with other treatments.
- **Biofeedback and Relaxation Techniques**: Biofeedback involves using electronic monitoring to help patients gain control over involuntary physiological functions, such as muscle tension or heart rate. By learning how to relax specific muscles, including those in the pelvic floor, patients may experience pain relief. Relaxation techniques, such as deep breathing, meditation, and progressive muscle relaxation, can also help

manage the emotional and physical stress associated with chronic orchialgia.[69]

Multimodal Therapy Approach

In many cases, the best results for managing chronic orchialgia come from a combination of therapies. Multimodal therapy, which integrates pharmacological, physical, psychological, and surgical treatments, offers a comprehensive approach to managing this complex condition. This individualized approach allows for the simultaneous treatment of both the physical and psychological aspects of chronic pain, increasing the likelihood of long-term relief.[70]

Chronic orchialgia is a complex condition with varied causes and treatment responses. A stepwise approach, starting with conservative therapies and progressing to more invasive ones, is crucial for optimal outcomes. Multimodal therapy, combining medical, surgical, and psychological treatments, offers relief in complex cases. Further research into orchialgia's mechanisms and the development of novel therapies will improve its management.

Outcomes and Prognosis in Chronic Orchialgia

Chronic orchialgia, a persistent testicular pain lasting over three months, is a complex condition with multiple causes, including idiopathic origins, trauma, infections, and nerve-related issues. The prognosis for chronic orchialgia depends on the underlying cause, duration and severity of symptoms, and treatment modalities used. Short-term outcomes include conservative

management, such as rest, activity modification, and pharmacological interventions like NSAIDs or nerve pain medications, which can alleviate mild to moderate pain within weeks to months of initiating treatment.

Initial response to therapy is better for patients with clear etiologies, such as infections or musculoskeletal problems. Early surgical intervention, such as minimally invasive procedures like varicocele repair or microsurgical denervation of the spermatic cord, has shown promising results for patients unresponsive to conservative measures, with success rates reported between 70-80%. These patients can experience quick recovery and substantial pain relief.

Long-term outcomes are more variable and depend on the persistence of symptoms, the appropriateness of the treatment approach, and the patient's psychological response to chronic pain. Recurrent pain can be challenging to manage, especially if initial treatments focus solely on symptom management rather than addressing underlying conditions. Chronic orchialgia often requires ongoing pain management, including regular use of medications or long-term physical therapy.

Surgical interventions, such as microsurgical denervation of the spermatic cord and orchiectomy (testicle removal), offer definitive options for severe cases. However, outcomes are not guaranteed, and a small percentage of patients may continue to experience pain postoperatively. Orchiectomy is considered a last resort due to its psychological and physical implications, but patients who

undergo it for severe pain typically report satisfaction with the results if all other treatments have failed.[71-74]

Psychosocial factors, including anxiety, depression, and pain-related catastrophizing, can significantly impact the prognosis of chronic orchialgia. Patients with coexisting psychological conditions tend to have poorer outcomes, with chronic pain exacerbating mental health issues. Incorporating psychological therapies, such as cognitive-behavioral therapy (CBT) or biofeedback, into treatment plans can improve long-term prognosis by helping patients manage the emotional aspects of chronic pain.

Chronic orchialgia's outcomes and prognosis depend on various factors, including the underlying cause, duration of symptoms, and treatment modalities. A multidisciplinary approach combining medical, surgical, and psychological therapies offers the best potential for improving long-term outcomes and quality of life.[75]

Singh and Sinha (2008) conducted a study to review the etiology and management of idiopathic chronic orchialgia, a condition representing a management dilemma and frustration for both clinicians and patients. They found that in nearly 25% of cases, no obvious cause for the chronic testicular pain is identified. This condition can affect men of any age but is most common in the 20–30 years age group. The goal of treatment is to enable patients to return to routine activities without significant use of analgesics. They noted the scarcity of published material in urology regarding the etiology and treatment of

idiopathic chronic orchialgia but highlighted that many treatment options exist. They concluded that a multidisciplinary team approach is essential, allowing patients to benefit from the various available treatment options, thereby improving their quality of life and mechanisms for coping with pain.[40]

Keoghane and Sullivan (2010) conducted a study to investigate and manage chronic scrotal pain, which is defined as persistent or recurrent episodic scrotal pain associated with symptoms suggestive of urinary tract infection or sexual dysfunction without confirmed epididymo-orchitis or other obvious pathology. They used a Medline search from 1975 to 2010 and reviewed a mixture of retrospective and prospective studies of intermediate quality, as well as the 2009 guidelines from the European Urological Association and the International Continence Society. They found a crude incidence of 350-400 cases of chronic scrotal pain per 100,000 men per year based on a questionnaire among Swiss urologists, although data on the impact of scrotal pain on quality of life are lacking. The condition includes terms such as orchalgia, orchidynia, and chronic epididymitis, and it is a challenging condition for both general practitioners and urologists due to its ill-understood complex of symptoms and unpredictable course. They concluded that a clear understanding of the etiology and management strategies, which may include conservative and medical therapies as well as surgical interventions, is essential for effectively treating patients with chronic scrotal pain.[76]

Kumar et al. (2010) conducted a study to review the causes, principles, and recent concepts in the management of chronic testicular pain. They used a

literature search methodology, examining abstracts, original papers, and review articles in the Cochrane Database, Medline, and medical textbooks using keywords like 'testicular pain' and 'orchialgia'. They found that the management of chronic testicular pain primarily relies on clinical assessment, with recent advancements in non-surgical management due to the emergence of pain relief as a specialty. However, pain control can be problematic, sometimes necessitating orchiectomy. They concluded that management requires careful assessment of testicular and extratesticular causes, and while symptom relief is not always possible, understanding and empathizing with the patient's condition is crucial. Surgical options should be approached cautiously, as there is no guarantee of symptom resolution, and patients should be adequately counseled.[77]

Levine L (2010) Chronic testicular pain is a common issue for urologists, as there is no clear treatment regimen or standard protocol for evaluation. The etiology of testicular pain is varied and often idiopathic, with reversible causes including spermatocele, tumor, infection, varicocele, and torsion. Chronic orchialgia is defined as at least 3 months of chronic or intermittent pain, but it may also involve pain involving the epididymis, vas deferens, or adjacent paratesticular structures. Chronic scrotal content pain is a more appropriate term. This study the current understanding of chronic scrotal content pain, etiology, evaluation, and published literature on treatment. Most published literature is cohort studies with limited patient numbers, rarely placebo-controlled, and without a uniform standard evaluation. Microdenervation of the

spermatic cord is emerging as a reasonable and effective outpatient surgical technique to resolve chronic scrotal content pain, with successful results.[09]

Engeler et al. (2013) conducted a study to summarize the evolving changes in the management of patients with chronic pelvic pain, referring to the 2012 version of the European Association of Urology (EAU) guidelines on chronic pelvic pain. They used a systematic review methodology, analyzing literature from online databases between 1995 and 2011 to update the guidelines. They found that progress in pain science has shifted the understanding of pelvic pain from an organ-centered perspective to one based on pain mechanisms, incorporating psychological, social, and sexual dimensions. The study highlighted the complexity of determining adequate investigation to rule out treatable diseases before focusing on a pain-centered approach. They concluded that managing chronic pelvic pain requires integrating medical, psychosocial, and sexual elements to engage patients in a collaborative approach to pain relief and rehabilitation. This comprehensive approach is necessary for effective self-management of chronic pelvic pain.[78]

Sigalos and Pastuszak (2017) conducted a study to review the epidemiology, diagnosis, and evaluation of chronic orchialgia. They used a literature review methodology to analyze the condition, defined as chronic or intermittent scrotal pain lasting at least three months that significantly interferes with daily activities. They found that chronic orchialgia accounts for 2.5–4.8% of urologic clinic visits, typically presenting in men in their mid to late 30s but can occur at any age. The differential diagnosis includes epididymitis, testicular torsion, tumors,

obstruction, varicocele, epididymal cysts, hydrocele, iatrogenic injury following vasectomy or hernia repair, and referred pain from various sources. They noted that approximately 25–50% of chronic orchialgia cases are idiopathic. They concluded that it is reasonable to consider psychological and psychosocial factors contributing to chronic pain, and invasive testing is not recommended in the work-up of chronic orchialgia.[79]

Sinha and Ramasamy (2017) conducted a study to review the diagnosis, management, and treatment options for post-vasectomy pain syndrome (PVPS). With around 500,000 vasectomies performed annually in the United States, 1-2% of patients experience chronic testicular pain lasting more than three months post-procedure. PVPS is a diagnosis of exclusion, potentially caused by direct damage to spermatic cord structures, nerve compression via inflammation, back pressure from epididymal congestion, and perineural fibrosis. They found that treatment should start with the most noninvasive options, including acupuncture, pelvic floor therapy, and pharmacologic treatments, and progress to surgical management if symptoms persist. The study concluded that managing PVPS requires a multimodal approach, emphasizing the importance of understanding the potential etiologies and available therapeutic options to improve patients' quality of life.[80]

The study by **Rottenstreich et al (2017)** examined the frequency, pathology, and outcome of Chronic Scrotal Pain (CSP) among young adults. The study reviewed medical records of 382,036 young males, revealing that CSP was recorded in 3084 patients (0.8%), with 16,222 primary physician visits.

Varicocele was the most common physical finding (54.1%), followed by inguinal hernia (4.5%), genital infection (4.3%), hydrocele (4.2%), and referred pain (3.3%). Of the 252 patients (8.2%) who underwent surgical treatment, orchiectomy was not necessary in any. In 34.4% of cases, no specific etiology was found, and no malignant tumors or testicular torsion were diagnosed. The study suggests defining CSP as testicular pain lasting longer than 14 days.[81]

Lian et al. (2017) conducted a study on the psychological perspectives in patients with chronic orchialgia. They used a review methodology to explore various treatment options for chronic orchialgia, including conservative measures, medical therapy, in-office treatments, and surgical procedures. They found that while research primarily focuses on these concrete treatment options, there is little focus on the potential co-morbid or causative psychological issues. They concluded that by considering the potential psychological co-morbidities and stressors associated with chronic orchialgia, physicians can better utilize a multi-modal approach to managing this challenging problem.[82]

Chaudhary et al (2019) conducted a prospective study from 2007 to 2016 to assessed the long-term efficacy, complications, and patient perceptions of microsurgical denervation of the spermatic cord in treating chronic orchialgia. Out of 48 patients with 62 testicular units, 31 (81.57%) experienced complete pain relief, while 4 (10.52%) experienced partial pain. The remaining 3 (7.89%) were non-responders. Complications included superficial wound infection in 3 units (4.83%), hydrocele in 2 units (3.22%), subcutaneous seroma in 2 units

(3.22%), and an incisional hematoma in 1 unit (1.61%). The study suggests that idiopathic chronic orchialgia remains a challenging condition to manage, and if surgery is considered, microsurgical denervation of the spermatic cord should be considered as a first surgical approach to relieve pain and sparing the testicle.[83]

Mwamukonda et al. (2019) conducted a retrospective study to identify the categories of mental health (MH) diagnoses most frequently associated with chronic testicular pain (orchialgia) and to determine if a correlation exists between MH diagnoses and orchialgia. They reviewed data from adult patients within the San Antonio Military Health System with a new diagnosis of orchialgia from January 2005 to April 2015, excluding those with acute pathology or recent inguinal/scrotal surgery. A comparative cohort of men presenting with hydroceles within the same timeframe was also analyzed. They found that 444 men met the inclusion criteria for orchialgia, while 133 men presented with hydroceles. The incidence of orchialgia increased significantly over the study period (P=0.001), and although MH diagnoses trended upward, this was not statistically significant (P=0.063). MH diagnoses were not significantly higher in orchialgia cases compared to controls (21.6% vs. 18.8%, P=0.479). However, the prevalence of anxiety was twice as high in orchialgia cases (9% vs. 4.5%), though not significantly (P=0.075). Overall, the prevalence of all MH diagnoses was significantly higher than in the general US population based on National Institute of Mental Health statistics. They concluded that while the incidence of orchialgia rose significantly over time, it was not significantly associated with

MH diagnoses, potentially skewed by the higher percentage of MH diagnoses in the study population compared to the general population.[84]

Arcila et al (2020) conducted a bibliographic search on testicular pain, identifying 10 subgroups of causes and etiologic classifications. The search included terms like testicular disease, trauma, microbiology, pathology, pathophysiology, secondary, surgery, treatment, and vasectomy. The initial search produced 625 articles, with 143 included in the review. The study divided 100 possible diagnoses into ten subgroups: infectious, neoplastic, traumatic, torsional, vascular, immunologic, neurologic, pharmacologic, obstructive, and miscellaneous causes. Treatment options were divided into pharmacologic and non-pharmacologic, with noninvasive and surgical alternatives. The authors emphasized that testicular pain is a complex pain syndrome with enigmatic origins. Treatment success relies on accurate identification of the cause of pain, and logical grouping could aid in accurate etiologic identification.[85]

Murthy et al. (2020) conducted a retrospective chart review to describe the outcomes of microscopic spermatic cord denervation (MSCD) for chronic scrotal content pain (CSCP) and identify predictors of treatment failure. They reviewed data from 2010–2019, including patient demographics and operative outcomes, excluding patients without post-operative follow-up. Success was defined as the complete resolution of bothersome pain, and multivariable logistic regression was used to identify predictors of failure. They found that out of 103 MSCD procedures performed on 93 patients, 75 (73%) were successful. Recurrence of pain occurred in 5 patients more than 6 months post-surgery.

The presence of pelvic floor muscle spasm (PFMS) independently predicted MSCD failure, with an odds ratio of 3.95 (P=0.02). Specifically, 47% of patients with PFMS experienced treatment failure compared to 23% without PFMS. They concluded that MSCD is a viable therapeutic option for patients with refractory CSCP, but those with PFMS should be counseled about the higher risk of treatment failure.[86]

Mondschein et al. (2020) conducted a study to review the etiology and management of chronic testicular pain. They used a literature review methodology, examining randomized control trials, current protocols, case series, and single-centre experiences of specialists. They found that chronic testicular pain, affecting a growing number of men worldwide, often presents with complex psychosocial elements and variable approaches to diagnosis and treatment, leading to delays in addressing reversible causes. They concluded that a multidisciplinary approach is essential for effective management, incorporating medical therapy, non-invasive physiotherapy techniques, and invasive surgical techniques, with emerging evidence supporting microsurgical techniques and nerve blocks. They emphasized the need for more research to determine the most effective duration and repetition of treatments and to understand the physiological relationship of chronic scrotal pain with other chronic pain syndromes. Conservative treatments should be trialed first within a multidisciplinary setting.[87]

Oh et al. (2021) conducted a comprehensive review of the literature on chronic scrotal content pain (CSCP) to enhance the understanding of its

pathophysiology, diagnosis, and treatment options. They performed a contemporary review, discussing new advances in CSCP-specific pain questionnaires, studies on microscopic spermatic cord denervation and its variations, and novel techniques such as electric nerve stimulation and cryoablation. They also reviewed randomized control trials with significant negative findings and literature focusing on the prevention of CSCP due to surgical iatrogenic causes. They found that the evolving literature has significantly advanced the diagnosis and treatment of CSCP, transitioning from oral medications to salvage options post-microscopic spermatic cord denervation. They concluded that these advances bring us closer to developing a thorough, evidence-based algorithm to guide urologists in the treatment of CSCP.[88]

Khalafalla K, et al (2021) conducted a literature search on the outcomes of various therapeutic modalities for patients with chronic orchialgia (CO) after failed conservative treatment. They included 34 studies for qualitative analysis, with most focusing on microsurgical spermatic cord denervation (MSCD). Eight studies used devices and interventions to block nerve sensations, while five reported vasectomy reversal as a modality to relieve post-vasectomy pain syndrome (PVPS). Two studies explored the outcomes of orchidectomy on pain relief in CO patients. The study found that MSCD is an appealing treatment modality with encouraging outcomes, and neuropathic pain can be managed with non-invasive modalities. Vasectomy reversal is a sound treatment

approach for PVPS patients, and orchidectomy is a terminal approach for patients with intractable pain.[89]

Newman et al (2021) Chronic testicular pain is a common male condition with potential causes including localized pathology, referred pain from surrounding tissues, or spinal conditions. The diagnostic differential is extensive, and in approximately 50% of cases, the cause is undetermined. Patients with testicular and inguinal pain may undergo extensive workups that overlook potential neuropathic and musculoskeletal causes. A conservative treatment program targeting presumptive chronic genitofemoral and/or ilioinguinal nerve entrapment along the inguinal canal was applied. The patient was symptom-free on the fourth visit after a year of pain, and at a one-year follow-up, the patient remains pain-free.[90]

Ergun et al (2023) conducted a study that Chronic orchialgia (CO) is a debilitating disease affecting the quality of life (QoL) of patients. It is defined as over 3 months of unilateral or bilateral scrotal pain, originating from the lower abdomen to the scrotum/glans penis. The disease is challenging to treat due to its unexplored pathophysiology and lack of evidence-based treatment schemes. This article reviews current literature, surgical techniques, and experiences with thousands of CO patients to provide the latest advancements in treatment and an algorithm for urologists to plan treatment. The algorithm includes conservative therapies and spermatic cord block outcomes, which predict the success of further invasive treatments. The success rates for various modalities discussed in the algorithm include microsurgical denervation of the spermatic

cord, ultrasound guided peri spermatic cord cryoablation, radical orchiectomy, targeted robotic intra-abdominal denervation, and alternate therapies.[91]

Kravchick et al. (2024) conducted a study to provide a simplified diagnostic and treatment approach for chronic scrotal content pain (CSCP). They used a systematic review methodology, analyzing literature from PubMed, MEDLINE, and Cochrane databases. They found that CSCP, affecting approximately 2.5% of all urology outpatient visits, is challenging to treat due to uncertainties about its etiology and pathophysiology. They subdivided CSCP into five clinical presentation types: hyperactive cremasteric reflex, pain localized in the testicles, pain in the testis, spermatic cord, and groin, pain localized in the testicles, spermatic cord, groin, and pubis, and pain in the testicles, spermatic cord/groin, and penis/pelvis. They included more information on pudendal neuralgia's role in CSCP and discussed various nerve block options. For microsurgical spermatic cord denervation failures, they included salvage ultrasound-guided targeted cryoablation, Botox injections, and posterior-inferior scrotal denervation. They concluded that subdividing CSCP into distinct clinical types could help general urologists better assess and manage scrotal pain, improving diagnostic and treatment approaches in daily practice.[92]

In India there are only few studies on this subject and our study is unique in providing the regional etiological variables of chronic orchialgia in central India. This study is a multimodal treatment study involving psychiatrist and pain clinic with the urologist. We studied the impact of multimodule therapy in such a complex disease treatment.

AIMS & OBJECTIVES.

Aim of study : To evaluate various etiological factors of chronic orchialigia and utilization of various treatment option as a part of multimodal strategy for the treatment of chronic orchialgia.

Objectives of study:

Primary Objective: To study various etiologies of chronic orchialgia.

Secondary objectives:

- To determine the change in VAS score following various treatment modalities.
- To review the predictors of successful outcome of treatment of chronic orchialgia.

MATERIALS & METHODS

Study design: This was a Prospective, observational study.

Institute: The study was conducted at the All-India Institute of Medical Sciences, Bhopal, in the Department of Urology. (March 2023-September 2024).

Conflict of interest: Nothing to disclose.

Ethical Clearance: Ethical clearance was obtained from the Institutional Human Ethics Committee (IHEC) of AIIMS Bhopal. (AIIMS/BPL/ IHECSR/ JULY /22/SS/08). Date: 28.02.2023

Sample size:

181 cases included in the study.

Study Population: All male patients between 18 to 80 years of age, presenting for the first time in the urology OPD with chronic orchialgia.

Inclusion criteria:

All patients of the age group of 18-80 years who present to AIIMS urology OPD with complain of orchialgia for more than 3 months were included.

Exclusion Criteria:

Patients with acute orchialgia.

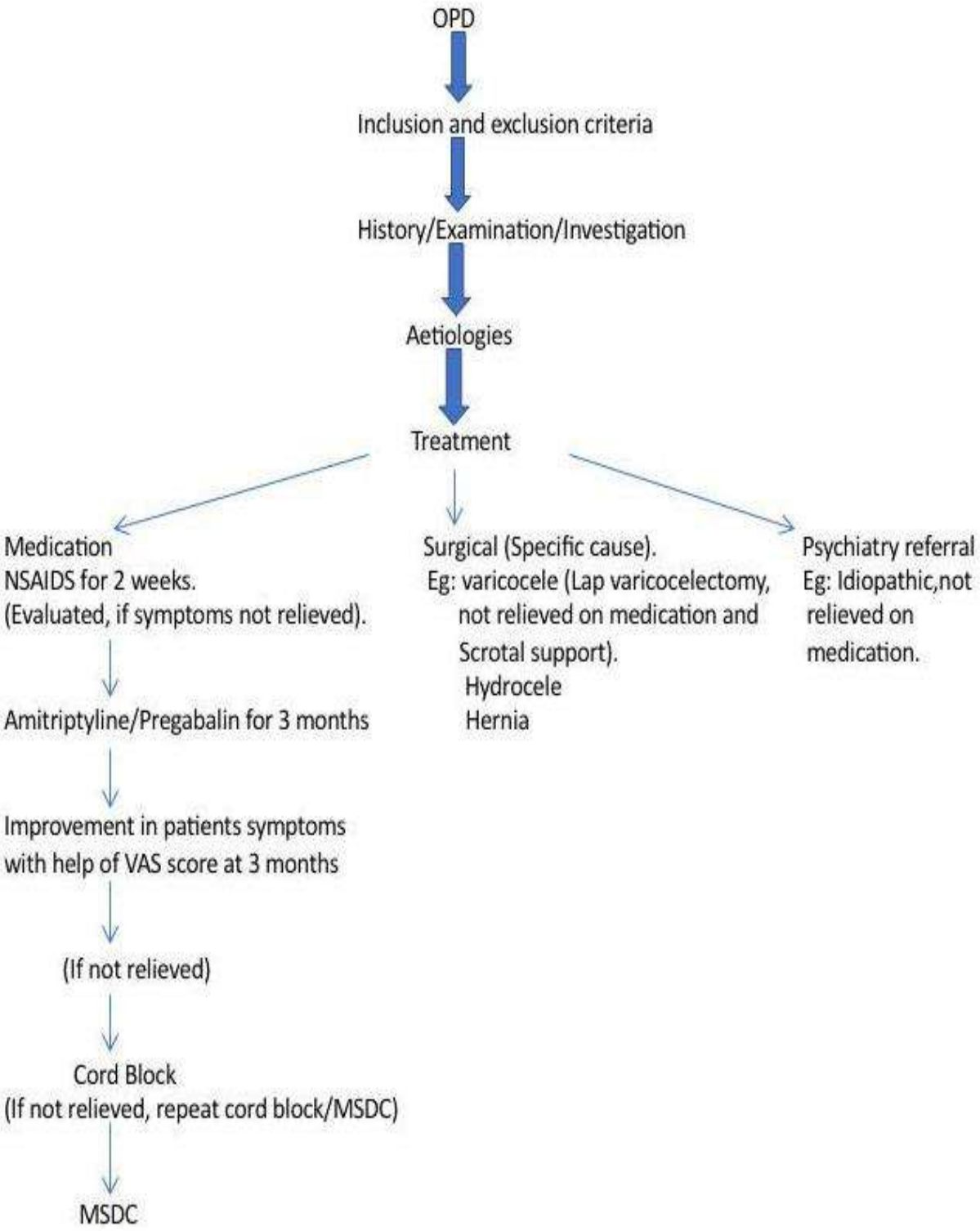
Patients with testicular trauma.

Patients with testicular abscess.

Patients with Acute Prostatitis.

Patients with Testicular tumor.

Observational Protocol:



Dosage of Drugs:

NSAIDS (diclofenac) 50 mg BD for 2 weeks, amitriptyline (25-75 mg) HS or pregabalin (75-150 mg) HS for 3 months.

Duration of Treatment : 3 months

Non routine investigations specifically related to research protocol: Serum PSA, urine AFB.

Methods

Data Collection Methods

Baseline Assessment

- **Patient History and Demographics:**

  A detailed medical history was obtained, including demographic data, occupational details, lifestyle factors (such as smoking, alcohol use), and sexual health history.

- **Clinical Examination:**

  Physical examination was performed to identify any palpable abnormalities, including varicocele, hydrocele, or hernia.

- **Diagnostic Tests:**

  The following tests will be used to evaluate the etiology of chronic orchialgia:

  - Ultrasound Scrotum: To identify structural abnormalities such as varicocele, epididymal cysts, or tumors.
  - Urinalysis : To detect infections (e.g., bacterial or viral orchitis, epididymitis).

- Blood Tests: Including complete blood count (CBC), C-reactive protein (CRP), and other inflammatory markers.
- Sexually Transmitted Infection (STI) Screening: In cases where infections are suspected as a cause.

Multimodal Therapy

The treatment approach will be multimodal and individualized based on the identified etiology:

- **Pharmacotherapy:**
  - NSAIDS (diclofenac) 50 mg BD for 2 weeks, amitriptyline (25-75 mg) or pregabalin (75-150 mg) HS for 3 months.
  - Antibiotics in cases of confirmed bacterial infection.
  - Neuropathic Pain Medications (e.g., Amitriptyline, gabapentin or pregabalin) if neuropathic pain is suspected.
  - Alpha-blockers for patients with suspected pelvic floor dysfunction/ chronic pelvic pain syndrome/ benign prostatic hyperplasia.
- **Physical Therapy:**

  Patients were referred to physiotherapy for pelvic floor rehabilitation, particularly if musculoskeletal causes are suspected.
- **Surgical Interventions:**
  - Hernioplasty, Hydrocelectomy or circumcision in patients with confirmed structural causes.

- Varicocelectomy in patients whose symptoms not relieved significantly after conservative therapy.
- Microsurgical denervation of spermatic cord could not be done in any patients due to short period of study duration.

- **Psychological Counseling :**

  For patients experiencing idiopathic chronic pain, counseling may be provided to address any associated psychological stressors.

- **Pain clinic referral :**

  For patients having history of previous inguinal surgery like hernia repair, not relieved significantly on medical management.

Follow-Up

- Patients was followed up at 15 days, 6 weeks, and 3 months after initiation of therapy.
- During each follow-up visit, the following data were recorded:
  - Pain Severity: Using a validated pain scale such as the Visual Analog Scale (VAS) score.
  - Adverse Effects: Any side effects or complications arising from treatments will be documented.

Outcome Measures

- Primary Outcome:
  - Identification of the various etiologies of chronic orchialgia in the central Indian population.

- Secondary Outcomes:
    - Reduction in pain severity as measured by the VAS score at 3 months.
    - Predictors of successful outcome of different treatment modalities based on etiologies.

Statistical Analysis:

The data were analyzed using IBM SPSS Statistics for Windows, Version 29.0. Armonk, NY, USA: IBM Corp. The data were presented in the form of mean (standard deviation) and percentage (%). The chi-square test was used to compare categorical variables, while the independent t-test was used to assess discrete variables between groups. Correlation analysis was performed to evaluate the strength and direction of associations between variables, and regression analysis was conducted to identify predictors and assess the relationship between dependent and independent variables. A p-value of <0.05 was considered statistically significant.

The following Statistical formulas were used:

1. **Mean**: To obtain the mean, the individual observations were first added together and then divided by the number of observation. The operation of adding together or summation is denoted by the sign Σ.

   The individual observation is denoted by the sign X, number of observation denoted by n, and the mean by $\overline{X}$.

$$\overline{X} = \frac{\Sigma X}{\text{No. of observations (n)}}$$

2. **Standard Deviation**: It is denoted by the Greek letter σ. If a sample is more than 30 then.

$$\sigma = \sqrt{\frac{\Sigma (X - \overline{X})^2}{n}}$$

   When sample in less than 30 then.

$$\sigma = \sqrt{\frac{\Sigma (X - \overline{X})^2}{n-1}}$$

3. **Median:** To determine the median value in a sequence of numbers, the numbers must first be arranged in value order from lowest to highest. If there is an odd amount of numbers, the median value is the number that is in the middle, with the same amount of numbers below and above. If there is an even amount of numbers in the list, the middle pair must be determined, added together and divided by two to find the median value. The median can be used to determine an approximate average.

3. **Chi square test:**

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Where O = Observed frequency

E = Expected frequency

4. **Student 't' test**: To test the significance of two means the student 't' test was used

$$t = \frac{\overline{X}_1 - \overline{X}_2}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

where $S^2 = \frac{(N_1 - 1)SD_1^2 + (N_2 - 1)SD_2^2}{N_1 + N_2 - 2}$

where $\overline{X}_1$, $\overline{X}_2$ are means of group 1 and group 2

N_1, N_2 are number of observation group1 and group 2

SD_1, SD_2 are standard deviation in group1 and group 2

5. **Correlation Coefficient (Pearson's r)**: The Pearson correlation coefficient measures the strength and direction of a linear relationship between two variables XXX and YYY. The formula for Pearson's r is:

$$r = \frac{\sum (X - \overline{X})(Y - \overline{Y})}{\sqrt{\sum (X - \overline{X})^2 \sum (Y - \overline{Y})^2}}$$

Where:

- X and Y are the two variables being compared
- $\overline{X}$ and $\overline{Y}$ are the means of X and Y
- r ranges from -1 to +1, where:
  - $r = 1$ indicates a perfect positive correlation
  - $r = -1$ indicates a perfect negative correlation
  - $r = 0$ indicates no correlation

6. Linear Regression: Simple linear regression models the relationship between two variables by fitting a linear equation to the observed data. The formula for a simple linear regression line is:

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

Where:

- Y is the dependent variable (the outcome you're trying to predict).
- X is the independent variable (the predictor).
- β0 is the intercept (the value of Y when X=0X = 0X=0).
- β1 is the slope (the change in Y for a one-unit change in X).
- ε represents the error term (the difference between the observed and predicted values of Y).

7. **Multiple Linear Regression**: If there are multiple independent variables, the equation becomes:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + \varepsilon$$

Where:

- X1 ,X2,…,Xn are the independent variables.
- β1,β2,…,βn are the coefficients for each independent variable.

The goal in both simple and multiple linear regression is to minimize the sum of squared differences between the observed and predicted values of YYY, known as the residuals, through a process called **Ordinary Least Squares (OLS)**:

$$\min \sum (Y_i - \hat{Y}_i)^2$$

Where:

- Yi is the actual observed value.
- Yi is the predicted value from the regression model.

8. Level of significance: "p" is level of significance

p > 0.05	Not significant
p <0.05	Significant
p <0.01	Highly significant
p <0.001	Very highly significant

OBSERVATION AND RESULTS

Table 1: Age wise distribution of study subjects (n=181)

Age group	No.	%
Up to 20 years	20	**11.0**
21-30 years	88	**48.6**
31-40 years	41	**22.7**
41-50 years	13	**7.2**
51-60 years	12	**6.6**
>60 years	7	**3.9**
Total	**181**	**100**

Table 1 shows the age distribution of the study participants (n=181). The majority of participants were in the age group 21-30 years and made up 48.6% (88 people) of the total sample. This was followed by 22.7% (41 subjects) in the 31-40 age group and 11.0% (20 subjects) in the "up to 20 years" category. The 41-50 age group accounted for 7.2% (13 test subjects), while 6.6% (12 test subjects) belonged to the 51-60 age group. The least represented age group was the over 60s, who made up 3.9% (7 subjects) of the sample. The average age of the participants was 31.73±11.84 years, with an age range of 18 to 67 years.

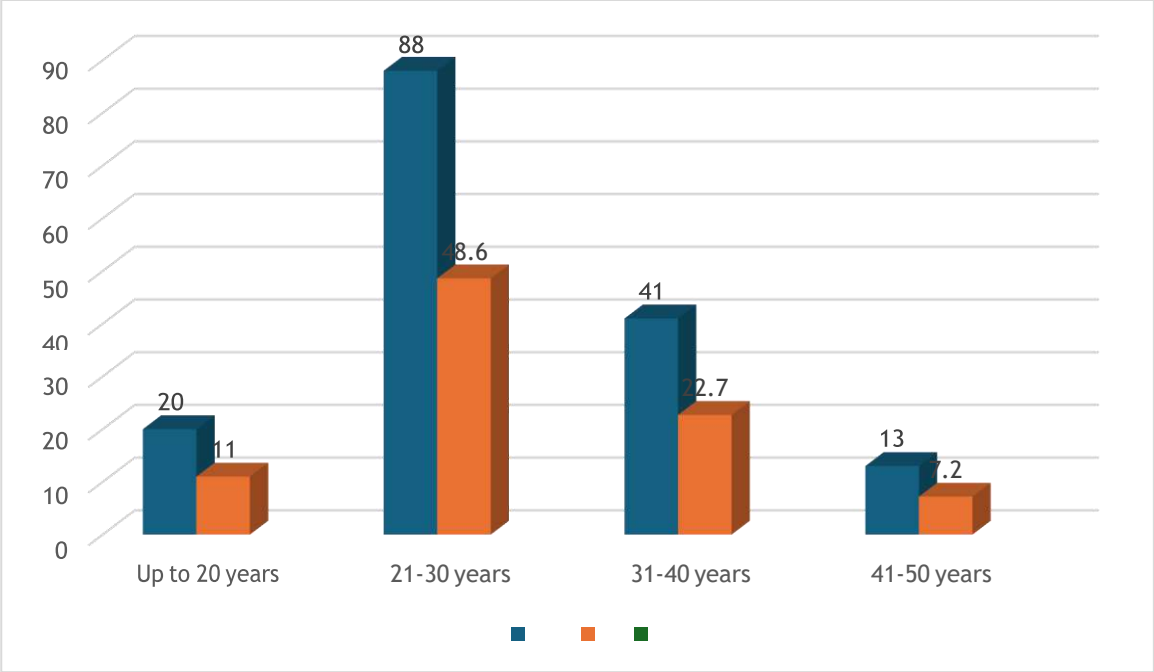


Figure 1: Age wise distribution of study subjects (n=181)

Table 2: Symptoms of chronic orchialgia in study subjects (n=181)

Symptoms	No.	%
B/L Testicular pain	49	**27.1**
Left Testicular pain	83	**45.9**
Right testicular pain	49	**27.1**
Total	**181**	**100**

The above table presents the distribution of testicular pain symptoms among the participants. A total of 49 participants (27.1%) reported bilateral (B/L) testicular pain, while 83 participants(45.9%) experienced left-sided testicular pain, making it the most common symptom. Additionally, 49 participants (27.1%) reported right-sided testicular pain. The pie chart visuallyrepresents these proportions, highlighting the predominance of left-sided testicular pain amongthe reported symptoms.

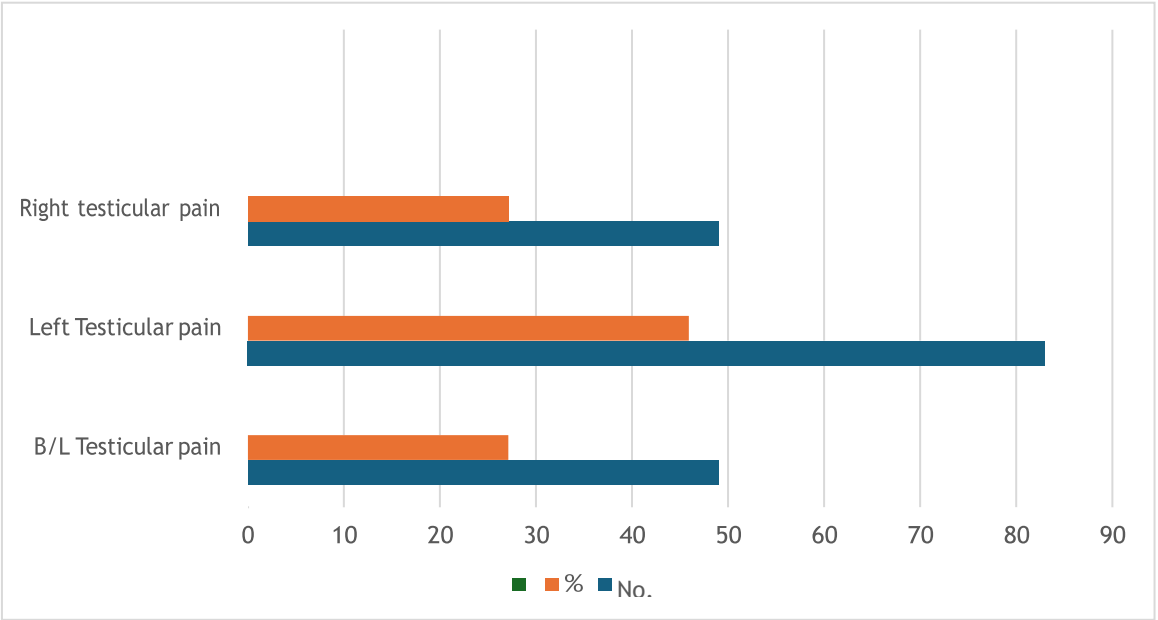


Figure 2 : Symptoms of chronic orchialgia in study subjects (n=181)

Table 3: Duration of Symptoms in chronic orchialgia in study subjects (n=181)

Duration	No.	%
Up to 6 months	87	**48.1**
7-12 months	32	**17.7**
1-5 years	46	**25.4**
>5 years	16	**8.8**
Total	**181**	**100**

The above table presents the distribution of participants based on the duration of their symptoms. The majority (48.1%) reported experiencing symptoms for up to 6 months. Additionally, 25.4% of participants had symptoms lasting between 1 and 5 years, 17.7% had symptoms for 7 to 12 months, and the smallest group (8.8%) reported symptoms persisting for more than 5 years. Mean duration of symptoms was 24.26±38.17 months median duration was 8 (4-24) months.

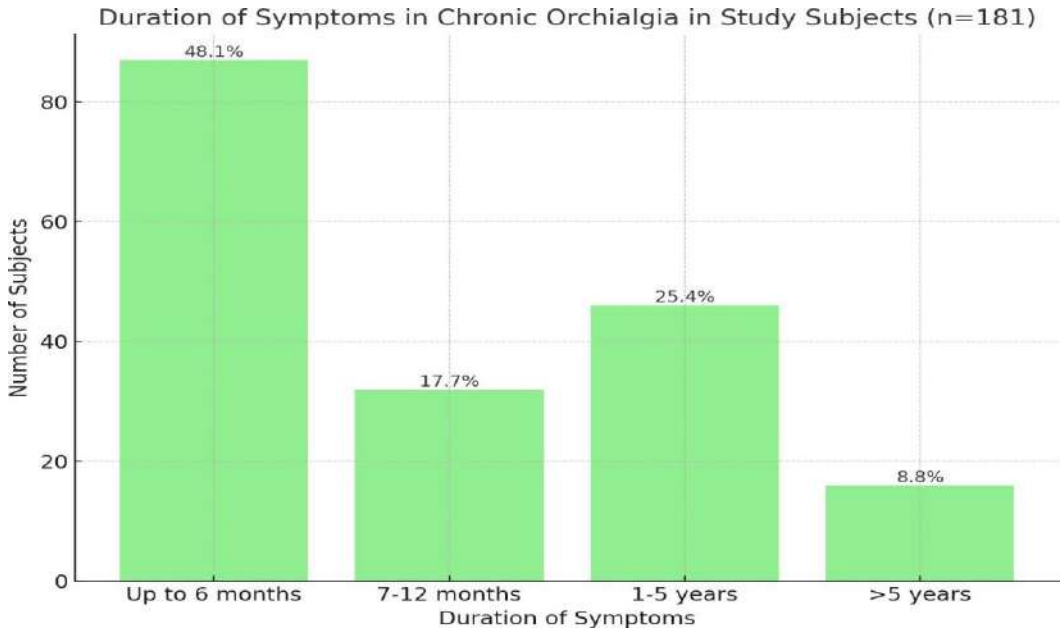


Figure 3 : Duration of Symptoms in chronic orchialgia in study subjects (n=181)

Table 4: Aetiology of chronic orchialgia in study subjects (n=181)

Aetiology	No.	%
Varicocele	68	37.6
Idiopathic	44	24.3
Epididymal cyst	25	13.8
Epididymo-orchitis	17	9.4
Chronic pelvic pain syndrome	8	4.4
Epididymitis	6	3.3
Hydrocele	6	3.3
Others	7	3.8

In the study of 181 patients with chronic orchialgia, varicocele was identified as the predominant etiology, affecting 68 patients (37.6%), followed by idiopathic cases affecting 44 patients (24.3%). Other causes were epididymal cysts (25 patients, 13.8%), epididymo-orchitis (17 patients, 9.4%), chronic pelvic pain syndrome (8 patients, 4.4%), epididymitis (6 patients, 3.3%) and hydrocele (6 patients, 3.3%). A smaller percentage had other causes (7 patients, 3.8%).

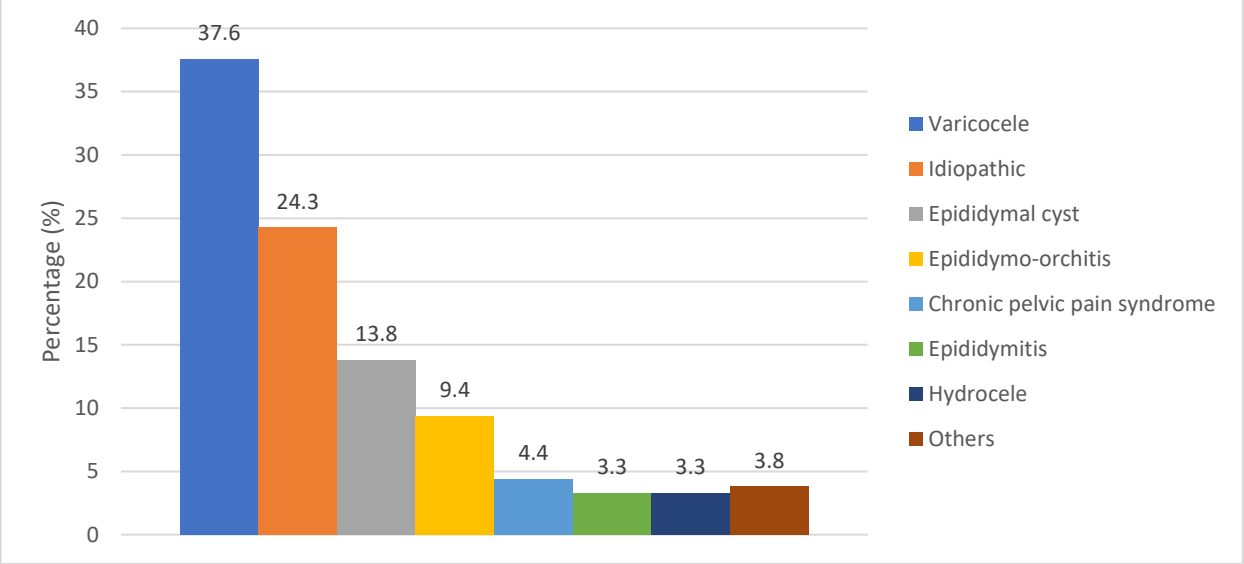


Figure 4: Aetiology of chronic orchialgia in study subjects (n=181)

Table 5: Distribution of patients according to multiple etiologies

		n	%
Multiple etiologies	Present	18	9.94
	Absent	163	90.06

This table shows that out of the total patients, 18 (9.94%) had multiple etiologies, while 163 (90.06%) had a single etiology.

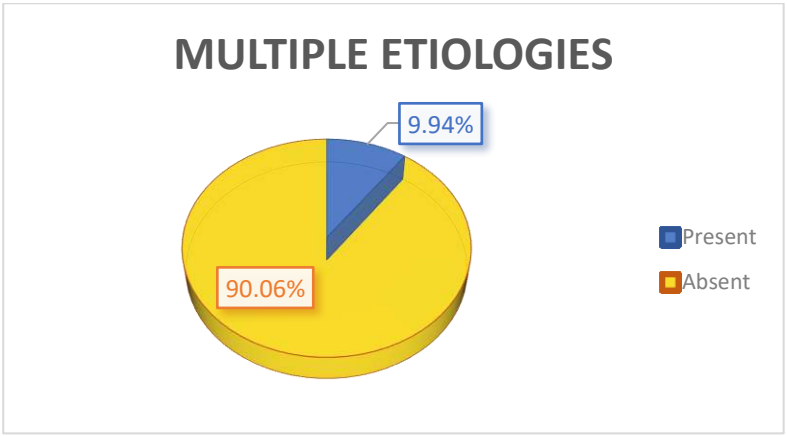


Figure 5: Pie chart shows the distribution of patients according to multiple etiologies

Table 6: Distribution of patients according to co-morbidity

		n	%
Co-morbidity	Present	13	7.18
	Absent	168	92.82

This table indicates that 13 patients (4.97%) had co-morbidities, while 168 patients (95.03%) did not.

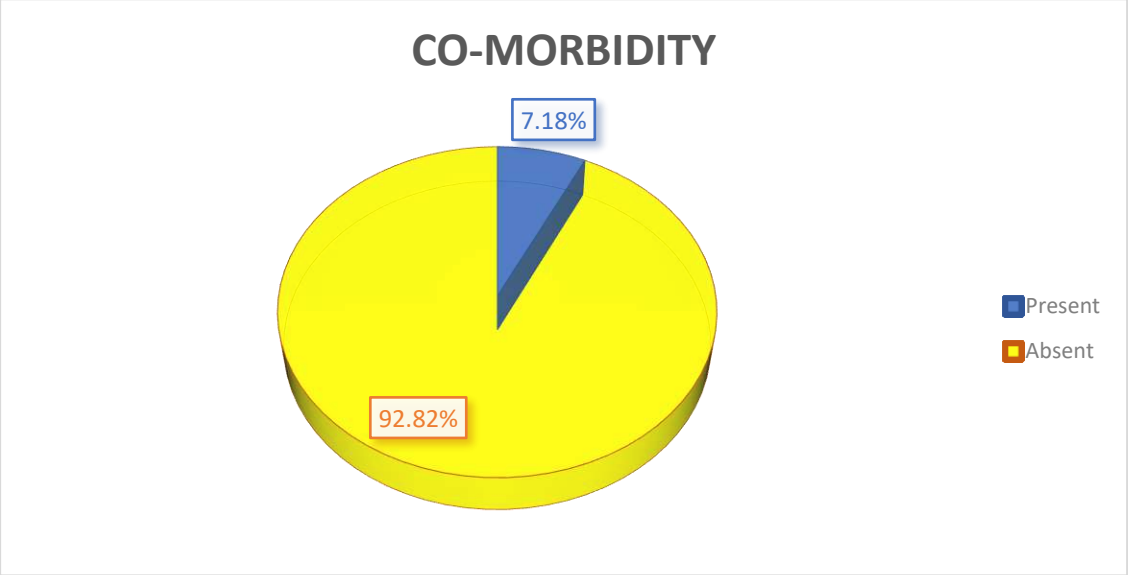


Figure 6: Pie chart shows the distribution of patients according to co-morbidity (DM, HTN, BPH)

Table 7: Comparison of VAS score between presentation and 3 months in study subjects (n=181)

	At presentation	At 3 months	t value	r value	P value
VAS score	3.64±1.66	1.17±1.09	16.83*	0.785	<0.001

Table 7 presents the comparison of the Visual Analogue Scale (VAS) scores between the time of presentation and at 3 months in the study subjects (n=181). At presentation, the mean VAS score was 3.64±1.66, indicating a moderate level of pain among the subjects. After 3 months, the mean VAS score significantly decreased to 1.17±1.09, showing a substantial reduction in pain levels. The t-value of 16.83 suggests a statistically significant difference between the two time points. The high correlation coefficient (r = 0.785) demonstrates a strong relationship between the scores at presentation and at 3 months. The P value is less than 0.001, indicating that the change in VAS scores is highly statistically significant.

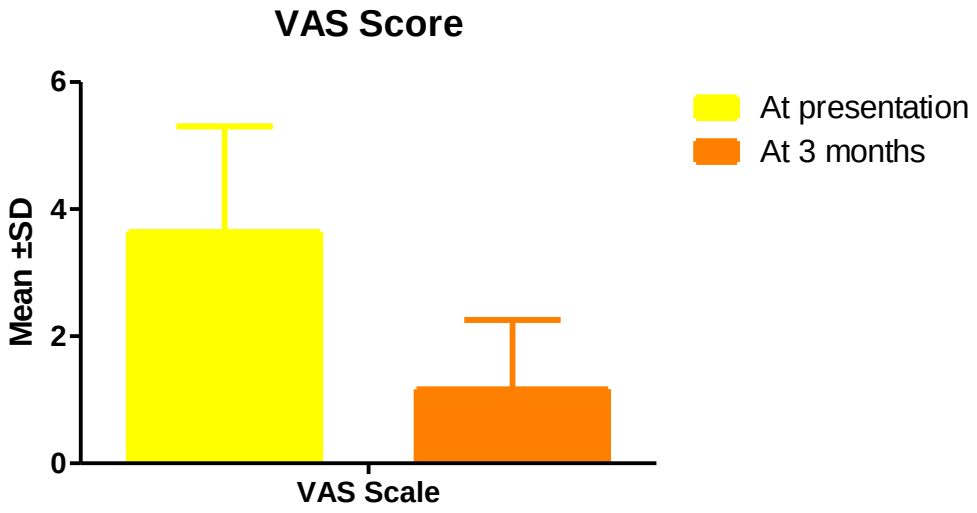


Figure 7: Bar chart shows the mean VAS score at presentation and 3 months

Table 8: Treatment modality in study subjects (n=181)

Treatment modality	No.	%
Medical	147	81.2
Surgical	15	8.3
Refer to psychiatry	15	8.3
Refer to pain clinic	4	2.2

In this study, the majority of patients with chronic orchialgia were treated medically (147 patients, 81.2%), while 15 patients (8.3%) underwent surgical treatment. Another 15 patients (8.3%) were referred to psychiatry, and 4 patients (2.2%) were referred to a pain clinic.

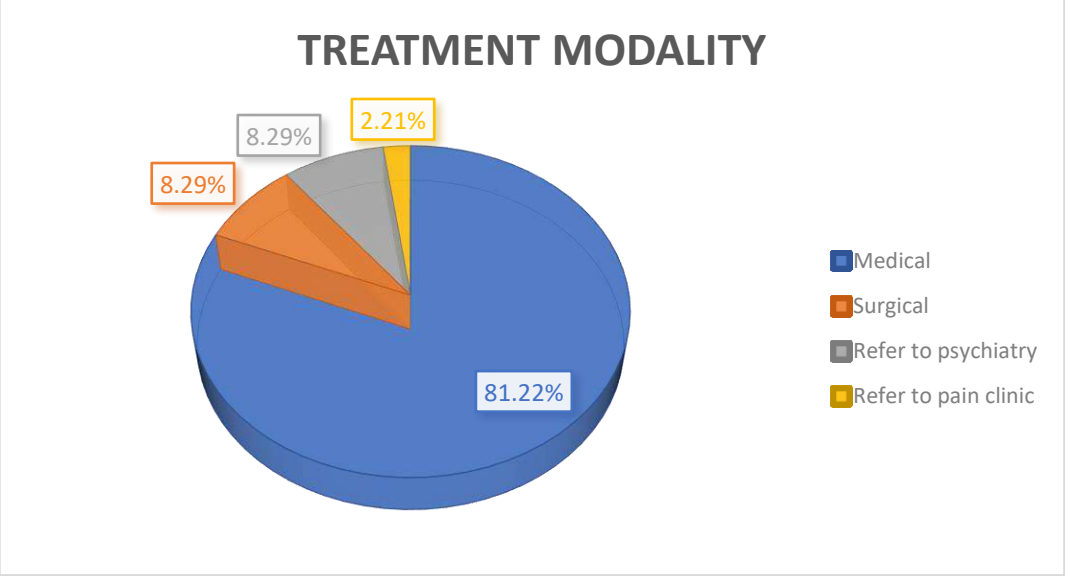


Figure 8. Treatment modality in study subjects (n=181)

Table 9: Surgical modality in study subjects (n=15)

Surgical modality	n	%
Eversion of sac	**6**	40.00
Hernioplasty	**3**	20.00
Laparoscopic varicocelectomy	**2**	13.33
Circumcision	**2**	13.33
Excision of cord granuloma	**1**	6.67
Excision of scrotal sebaceous cyst	**1**	6.67

Among the 15 patients who underwent surgical treatment for chronic orchialgia, the most common procedure was eversion of sac (6 patients, 40%). Hernioplasty was performed in 3 patients (20%), laparoscopic varicocelectomy in 2 patients (13.3%), circumcision in 2 patients (13.3%), excision of cord granuloma in 1 patient (6.7%), and excision of scrotal sebaceous cyst in 1 patient (6.7%).

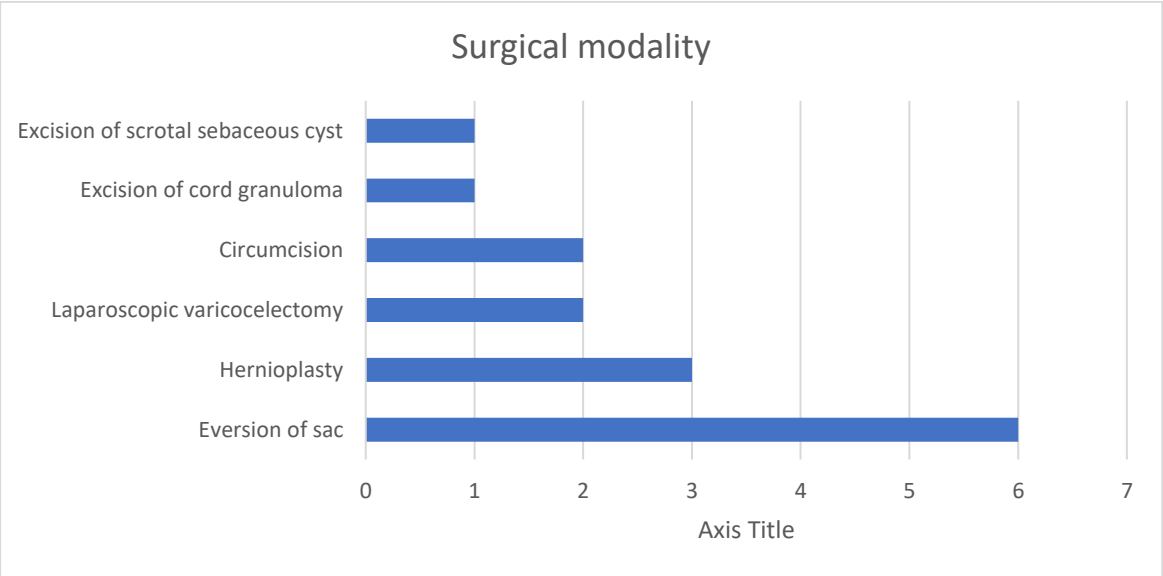


Figure 9: Treatment modality in study subjects (n=181)

Table 10: Association of VAS score with ≤40 years and >40 years age

VAS Score	Age				T	p-Value
	≤40 years (n=149)		>40 years (n=32)			
	Mean	±SD	Mean	±SD		
At presentation	3.66	1.67	3.50	1.65	0.507	0.613
At 3 months	1.19	1.06	1.16	0.95	0.156	0.876

Table 10 shows the association of VAS score with ≤40 years and >40 years age. The mean VAS score was 3.66±1.67 and 1.19±1.06 in ≤40 years age group and 3.50±1.65 and 1.16±0.95 in >40 years age group at presentation and at 3 months. Moreover, the age was not significantly different between different age groups.

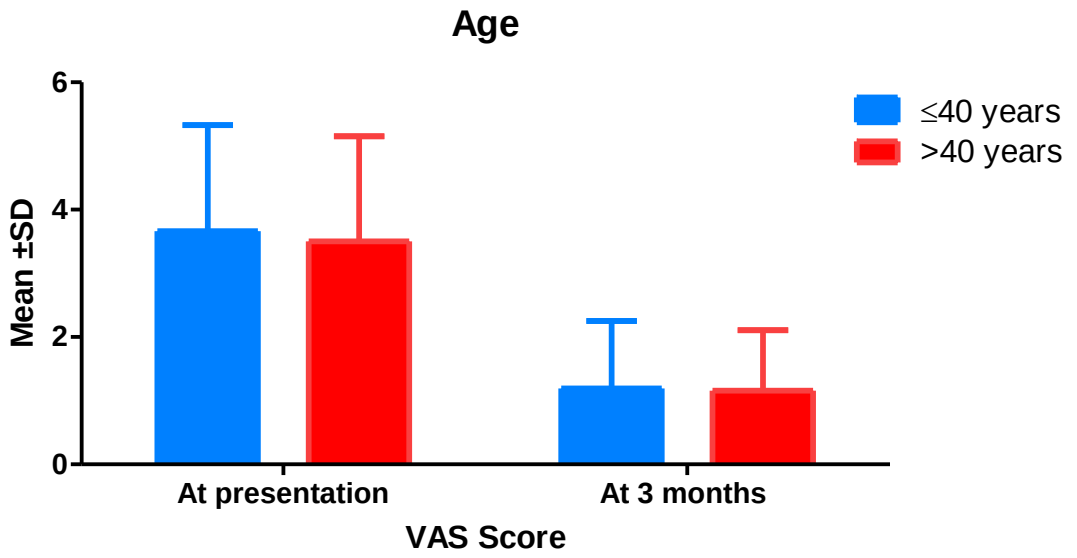


Figure 10: Bar charts shows the mean VAS score in ≤40 years and >40 years age

Table 11: Association of symptoms (unilateral vs bilateral) with VAS scores.

VAS Score	Unilateral (n=132)		Bilateral (n=49)		T	p-Value
	Mean	±SD	Mean	±SD		
At presentation	3.48	1.67	4.04	1.58	-2.019	0.045
At 3 months	1.14	1.04	1.29	1.04	-0.814	0.417

Table 11 shows the association of symptoms (unilateral vs bilateral) with VAS scores. The mean VAS score at presentation was 3.48±1.67 for unilateral cases and 4.04±1.58 for bilateral cases, with a statistically significant difference (t = -2.019, p = 0.045). At 3 months, the mean VAS score was 1.14±1.04 for unilateral cases and 1.29±1.04 for bilateral cases, but the difference was not statistically significant (t = -0.814, p = 0.417).

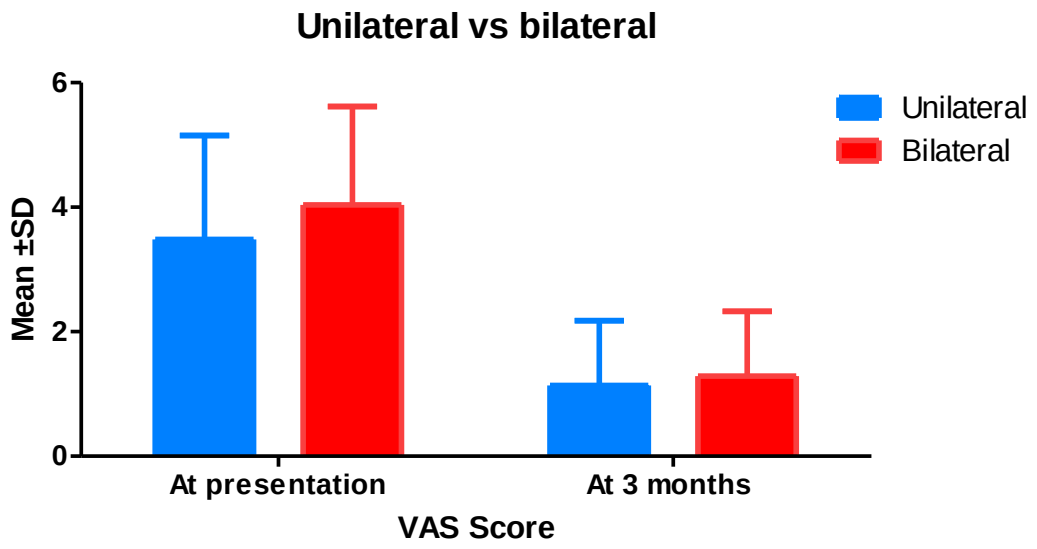


Figure 11: Bar charts shows the mean VAS score in symptoms (unilateral vs bilateral)

Table 12: Association of VAS scores with the duration of disease (≤6 months vs >6 months)

VAS Score	Duration of Disease ≤6 months (n=85)		Duration of Disease >6 months (n=93)		t	p-Value
	Mean	±SD	Mean	±SD		
At presentation	3.79	1.66	3.49	1.67	1.176	0.241
At 3 months	1.19	1.01	1.18	1.08	0.035	0.972

Table 12 shows the association of VAS scores with the duration of disease (≤6 months vs >6 months). At presentation, the mean VAS score was 3.79±1.66 for those with a disease duration of ≤6 months and 3.49±1.67 for those with a disease duration of >6 months, with no statistically significant difference (t = 1.176, p = 0.241). At 3 months, the mean VAS score was 1.19±1.01 for the ≤6 months group and 1.18±1.08 for the >6 months group, again with no statistically significant difference (t = 0.035, p = 0.972).

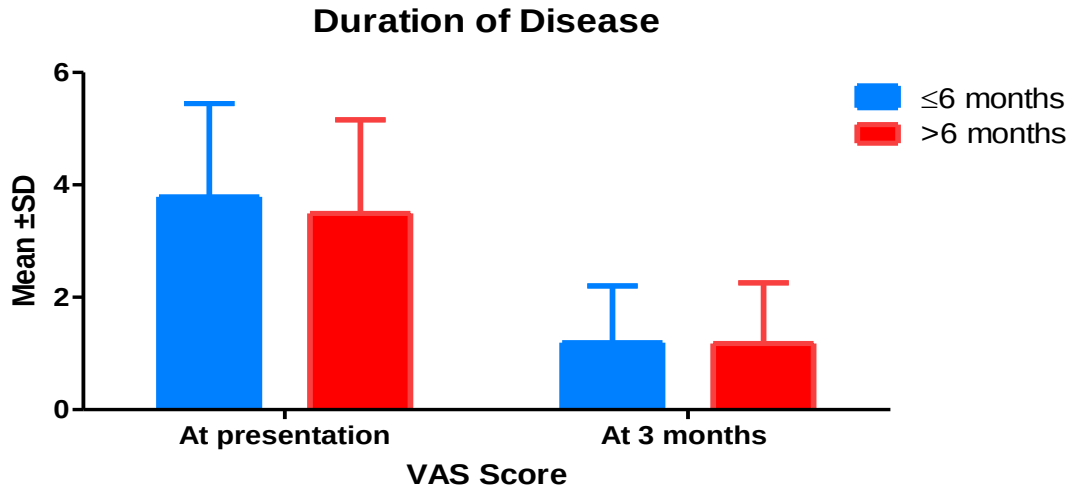


Figure 12: Bar charts show the mean VAS score in duration of disease (≤6 months vs >6 months)

Table 13: Association of VAS scores with marital status (unmarried vs married)

VAS Score	Unmarried (n=91)		Married (n=90)		t	p-Value
	Mean	±SD	Mean	±SD		
At presentation	3.48	1.57	3.79	1.74	-1.239	0.217
At 3 months	1.16	1.08	1.20	1.01	-0.227	0.821

Table 13 shows the association of VAS scores with marital status (unmarried vs married). At presentation, the mean VAS score was 3.48±1.57 for unmarried individuals and 3.79±1.74 for married individuals, with no statistically significant difference (t = -1.239, p = 0.217). At 3 months, the mean VAS score was 1.16±1.08 for unmarried individuals and 1.20±1.01 for married individuals, and the difference was also not statistically significant (t = -0.227, p = 0.821).

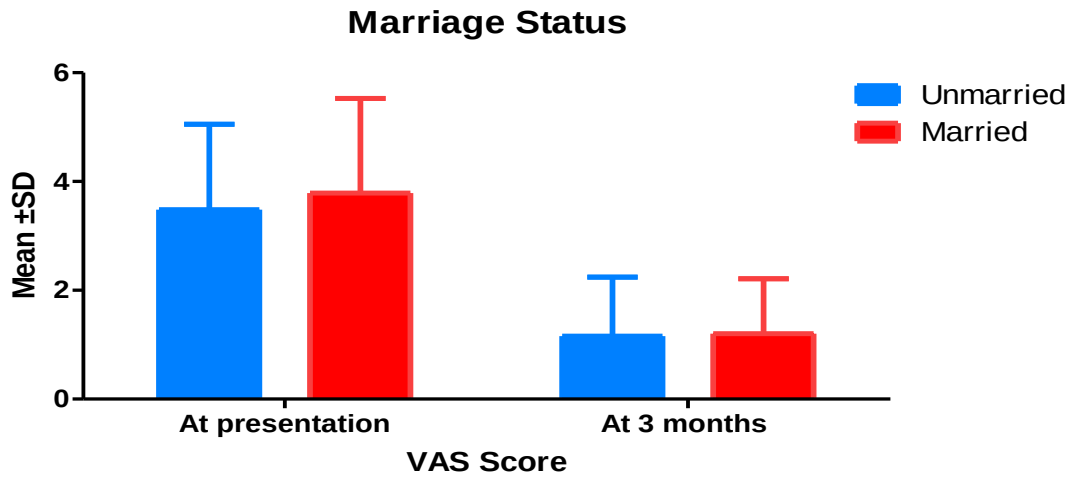


Figure 13: Bar charts show the mean VAS score in marital status (unmarried vs married)

Table 14: Association of VAS scores with BMI categories (BMI ≤22.9 kg/m² vs BMI ≥22.9 kg/m²)

VAS Score	Normal Weight (n=104)		Over weight (n=36)		Obese (n=41)		p-Value
	Mean	±SD	Mean	±SD	Mean	±SD	
At presentation	3.39	1.54	3.81	1.85	4.10	1.71	0.056
At 3 months	0.98	0.99	1.25	1.13	1.63	0.94	0.002

Table 14 shows the association of VAS scores with BMI categories (Normal weight: BMI ≤22.9 kg/m², Overweight: BMI 23-24.9 kg/m², and Obese: BMI ≥25 kg/m²). At presentation, the mean VAS score was 3.39 ± 1.54 for individuals with a BMI ≤22.9 kg/m² and 3.96 ± 1.77 for those with a BMI ≥22.9 kg/m², with a near significant difference (p = 0.056). At 3 months, the mean VAS score was 0.98 ± 0.99 for the lower BMI group and 1.45 ± 1.05 for the higher BMI group, showing a statistically significant difference (p = 0.002). This suggests that higher BMI is associated with higher VAS scores, especially at follow-up.

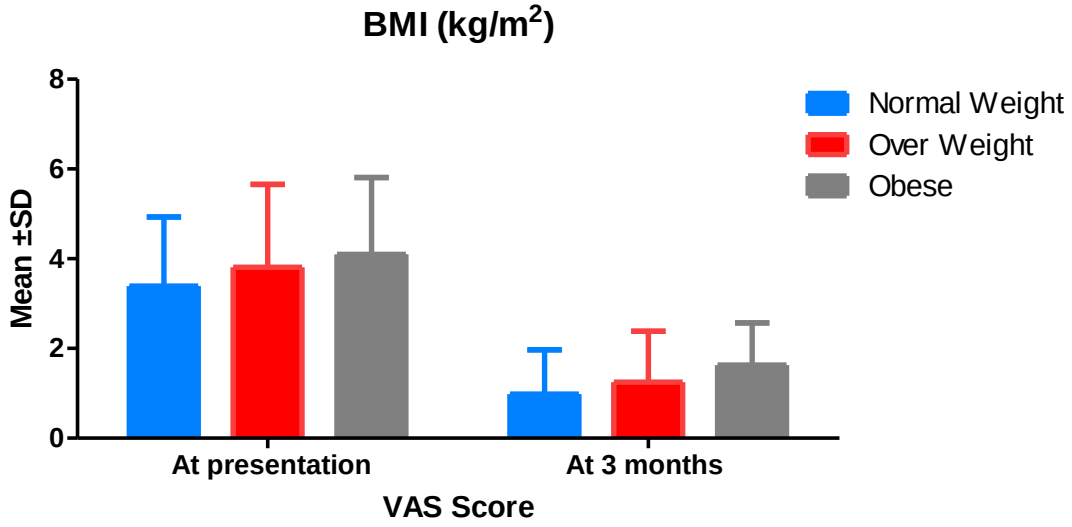


Figure 14: Bar charts show the mean VAS score in BMI categories (BMI ≤22.9 kg/m² vs BMI ≥22.9 kg/m²)

Table 15: Association of VAS scores with previous treatment or surgery.

VAS Score	Previous treatment/surgery				t	p-Value
	Yes (n=15)		No (n=166)			
	Mean	±SD	Mean	±SD		
At presentation	4.13	1.96	3.59	1.63	1.215	0.226
At 3 months	1.33	1.18	1.17	1.03	0.586	0.559

Table 15 shows the association of VAS scores with previous treatment or surgery. At presentation, the mean VAS score was 4.13±1.96 for individuals with a history of previous treatment or surgery and 3.59±1.63 for those without, with no statistically significant difference ($t = 1.215$, $p = 0.226$). At 3 months, the mean VAS score was 1.33±1.18 for those with previous treatment or surgery and 1.17±1.03 for those without, again with no statistically significant difference ($t = 0.586$, $p = 0.559$).

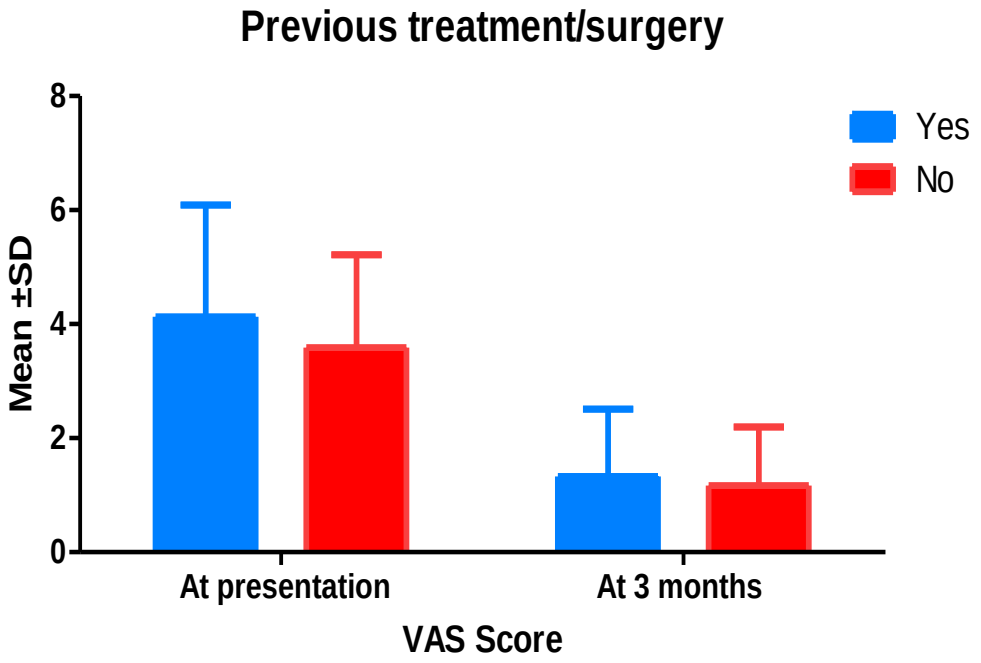


Figure 15: Bar charts shows the mean VAS score in previous treatment or surgery

Table 16: Association of VAS scores with the presence of co-morbidities

VAS Score	Co-morbidity				t	p-Value
	Yes (n=13)		No (n=172)			
	Mean	±SD	Mean	±SD		
At presentation	3.67	1.87	3.63	1.65	0.058	0.954
At 3 months	1.33	0.50	1.17	1.06	0.446	0.656

Table 16 shows the association of VAS scores with the presence of co-morbidities. At presentation, the mean VAS score was 3.67±1.87 for individuals with co-morbidities and 3.63±1.65 for those without, with no statistically significant difference (t = 0.058, p = 0.954). At 3 months, the mean VAS score was 1.33±0.50 for individuals with co-morbidities and 1.17±1.06 for those without, also with no statistically significant difference (t = 0.446, p = 0.656).

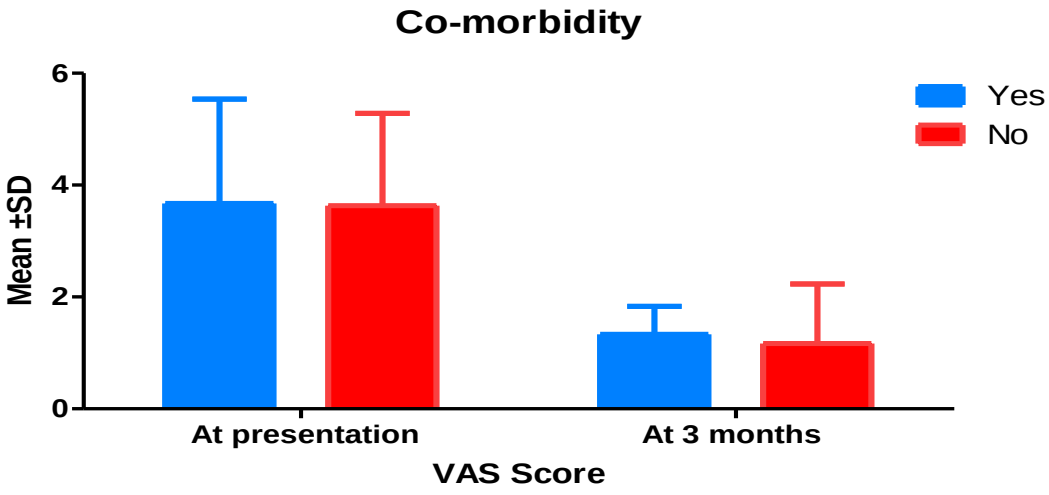


Figure 16: Bar charts shows the mean VAS score in presence of co-morbidities.

Table 17: Correlation between age, BMI and duration of disease and VAS score at presentation and 3 months

VAS Score	At presentation		At 3 months	
	Pearson Correlation	p-Value	Pearson Correlation	p-Value
Age	-0.060	0.423	-0.005	0.942
BMI	0.147	0.048	0.228	0.002
Duration of Disease	-0.117	0.121	0.046	0.539

The table shows the Pearson correlation coefficients and p-values for the association of VAS scores with age, BMI, and duration of disease at presentation and at 3 months.

- **Age**: At presentation, the Pearson correlation was -0.060 (p = 0.423), and at 3 months, it was -0.005 (p = 0.942), indicating no significant correlation between age and VAS scores at either time point.
- **BMI**: At presentation, the Pearson correlation was 0.147 (p = 0.048), showing a weak but statistically significant positive correlation with VAS scores. At 3 months, the Pearson correlation was 0.228 (p = 0.002), indicating a stronger and statistically significant positive correlation with VAS scores.
- **Duration of Disease**: At presentation, the Pearson correlation was -0.117 (p = 0.121), and at 3 months, it was 0.046 (p = 0.539), indicating no significant correlation between disease duration and VAS scores at either time point.

Table 18: Binary Logistic Regression Analysis of Risk Factors for Moderate to Severe VAS Scores in Chronic Orchialgia Patients

	B	S.E.	Wald	OR	95.0% C.I.		p-Value
					Lower	Upper	
Age	-0.004	0.031	0.015	0.996	0.937	1.059	0.902
BMI	0.012	0.114	0.012	1.013	0.809	1.267	0.913
Duration	-0.021	0.006	11.759	0.979	0.967	0.991	0.001
Symptom	-0.904	0.582	2.416	0.405	0.129	1.266	0.120
Multiple etiologies	-0.41	0.69	0.352	0.664	0.172	2.569	0.553
Marital Status	-0.384	0.674	0.325	0.681	0.182	2.55	0.569
Previous Treatment/surgery	-0.966	0.934	1.068	0.381	0.061	2.377	0.301
Co-morbidity	2.135	1.031	4.287	8.461	1.121	63.877	0.038

This table shows a binary logistic regression analysis used to assess the risk factors for moderate or severe Visual Analog Scale (VAS) pain scores (VAS > 3) at presentation in patients suffering from chronic orchialgia.

In this binary logistic regression analysis, the duration of symptoms and the presence of co-morbidities are significant predictors of moderate to severe pain in chronic orchialgia patients. Longer symptom duration tends to lower the likelihood of severe pain, whereas co-morbid conditions significantly increase it. Other factors, such as age, BMI, symptom type, multiple etiologies, and previous treatment, do not show a statistically significant impact on pain levels.

DISCUSSION

Chronic orchialgia, characterized by testicular discomfort lasting three months or more, presents a considerable difficulty in urological treatment. The condition is usually idiopathic and often causes considerable dissatisfaction for both patients and professionals. Davis et al. (1990) described chronic orchialgia as intermittent or persistent testicular discomfort that significantly interferes with daily activities and substantially reduces quality of life.[1] Furthermore, the term "chronic orchialgia" often does not do justice to the subtleties of the disease, as it can affect the testis, epididymis, paratesticular tissue and spermatic cord, resulting in a phenomenon that would be better described as chronic discomfort of the testicular contents.

The aim of this study was to evaluate various etiologies and it's response to multimodal treatment in individuals with chronic orchialgia in central India. The results shed light on the demographic characteristics, predominant causes, pain intensity and efficacy of treatment alternatives.

Age wise distribution of study subjects:

In our prospective study, 48.6% of patients with chronic orchialgia were 21–30 years old. As Singh and Sinha (2008) found, chronic orchialgia is more common in younger men, especially in their 20s and 30s.[40] Chronic orchialgia affects all age groups, although younger men may be more likely to seek treatment due to increased physical activity, urological knowledge and lifestyle changes. Patients aged 31-40 years accounted for 22.7% of the study group, while only 3.9% were over 60 years old. We found a mean age of 31.73 years and a

standard deviation of 11.84 years. Rottenstreich et al (2017) found a comparable mean age in their group of patients with chronic orchialgia.[81] Urological consultations are often triggered by chronic complaints in the scrotum.[79]

Left testicular pain is more common than right or bilateral testicular pain:

The symptoms of orchialgia in this study, with left-sided testicular pain being the most frequently reported (45.9%), followed by bilateral and right-sided pain (27.1% each), mirror findings from Keoghane and Sullivan (2010), who discussed the ill-defined and challenging nature of scrotal pain syndromes, including their varied presentation.[76] This variation in pain distribution is likely associated with underlying conditions such as varicocele, which was the most common etiology in this study (37.6%). This finding is consistent with Sigalos and Pastuszak (2017), who noted that varicocele and idiopathic causes often account for a significant proportion of orchialgia cases.[79]

Duration of symptoms:

In our study, the majority of patients had suffered from symptoms for up to six months (48.1%), while 8.8% reported symptoms lasting more than five years. The average symptom duration was 24.26 months, which is consistent with the findings of Singh and Sinha (2008) and Keoghane and Sullivan (2010), who found that chronic orchialgia often persists for prolonged periods without relief.[40,79] The long duration of symptoms correlates with Kumar et al. (2010), who emphasized that chronic testicular pain often persists for extended periods and presents a management challenge.[77]

Variocele : One of the leading cause of chronic orchialgia in central India.

In our study, varicocele was the most common cause, accounting for 37.6% of patients. Several studies have shown that varicocele is an important cause of persistent scrotal symptoms (Chaudhary et al., 2019; Rottenstreich, 2017).[81,83] Varicocele causes venous congestion and a high temperature in the scrotum, which can lead to discomfort. Varicocele can lead to male infertility, which can worsen the quality of life of patients with chronic orchialgia (Parekattil et al., 2010). Rottenstreich et al (2017) found that varicocele is the main cause of persistent orchialgia in young people.[20,81] The prevalence of varicocele may be related to its effect on venous outflow and increased pressure in the pampiniform plexus, leading to discomfort.

Idiopathic chronic orchialgia: Posing a challenge in management of chronic orchialgia.

Of note, 24.3% of our patients presented with idiopathic orchialgia, a finding that is consistent with previous studies showing no identifiable etiology in up to 50% of cases.[1] The idiopathic nature of chronic orchialgia poses a significant problem in clinical practice and complicates both diagnosis and treatment.

The relatively high proportion of idiopathic orchialgia (24.3%) and the complex presentation of symptoms seen in this study mirror findings by Mondschein et al. (2020) and Oh et al. (2021), who emphasized the importance of a multidisciplinary approach to managing these patients.[87,88] Our study reinforces the need for individualized, multimodal treatment strategies to

address the diverse causes of chronic orchialgia and scrotal pain, as also suggested by Lian et al. (2017).[82]

Other etiologies : Epididymal cyst, epididymo-orchitis, epididymitis.

In addition, we identified epididymal cysts (13.8%), epididymo-orchitis (9.4%) and epididymitis (3.3%) as common causes of the symptoms. This confirms the observations of Parekattil et al. (2010), who indicated that inflammation and cystic changes in the epididymis often lead to persistent scrotal pain.[20]

Chronic pelvic pain syndrome:

In our study, chronic pelvic pain syndrome (CPPS) was identified as the etiology in 4.4% (8 patients) of cases. Our results are consistent with the CPPS literature. The results of our study are consistent with the existing literature on CPPS. Engeler et al (2013) emphasized that CPPS is often a diagnosis of exclusion, with a wide range of symptoms and possible causes.[78] The condition can also affect neuropathic pain pathways, where central sensitization plays a key role in maintaining pain even after the original cause has disappeared.[94] In addition, the treatment of CPPS usually requires a multidisciplinary approach, similar to the treatment of chronic orchialgia. The involvement of pain specialists, urologists, physiotherapists and mental health professionals is crucial to achieve better outcomes (Lian et al., 2017).[82]

Multiple etiologies:

In our study, 9.9% of patients with chronic orchialgia had multiple causes of pain, highlighting the inherent complexity of treating this condition. The presence of multiple causes underscores the difficulty in providing effective and

sustained relief to patients, as each factor may require a different therapeutic approach. This complexity requires a multimodal treatment strategy that addresses the various underlying causes of pain simultaneously. Keoghane and Sullivan (2010) emphasized the importance of a multimodal strategy in the treatment of chronic orchialgia, particularly in cases with multiple causes.[76] They shows that chronic pain syndromes such as orchialgia often involve a combination of physical, neurological, and sometimes psychological factors, necessitating the use of multiple treatment modalities. These include medical treatment, physiotherapy, psychological support and, in some cases, surgical intervention. Psychological support, including cognitive behavioral therapy, is also crucial, especially in cases where chronic pain has led to significant emotional or psychological problems.[82] The complexity of treating patients with multiple causes of orchialgia requires collaboration between urologists, pain specialists, physiotherapists and mental health professionals. This comprehensive model of care can help address the multifactorial nature of chronic pain, improving patient outcomes and quality of life.

Significant change in VAS score after multimodal therapy.

In our study the pain intensity (VAS score), assessed using the visual analog scale (VAS) score, showed a significant decrease from a mean of 3.64 at initial presentation to 1.17 after three months of therapy in chronic orchialgia. This improvement demonstrates the effectiveness of multimodal treatment, which includes both medical and surgical interventions along with psychological therapy and pain clinic referral. Chaudhary et al (2019) observed the same

results and indicated that individuals with persistent orchialgia experienced significant pain relief after microsurgical denervation.[83] According to Sigalos and Pastuszak (2017), there is a wide range of diagnoses for patients with persistent scrotal contents. Sigalos and Pastuszak (2017) emphasized that chronic scrotal content pain can have a wide range of diagnoses, and treatment must therefore be tailored to each patient's specific presentation.[79] Our study supports this perspective, as patients with various causes of orchialgia, including varicocele, epididymal cysts, and idiopathic cases, benefited from individualized treatment plans.

Association of co- morbidities with pain intensity:

In our study, a significant association was found between comorbidities and increased pain intensity in individuals with chronic orchialgia. Specifically, conditions such as chronic pelvic pain syndrome (CPPS) and epididymitis contributed to heightened pain perception, complicating the management of chronic orchialgia. This observation aligns with findings by Murthy et al. (2020), who highlighted that pelvic floor muscle spasm—a common feature in patients with chronic pelvic pain—was associated with a lower success rate following spermatic cord denervation.[86] This underscores the importance of identifying and managing comorbid conditions in patients with chronic orchialgia, as they can significantly affect both pain intensity and the outcome of treatment efforts.

Higher BMI posing challenge in reducing symptoms of chronic orchialgia:

In our study, a significant correlation was found between a higher body mass index (BMI) and a higher pain intensity in patients with chronic orchialgia.

Specifically, individuals with a BMI ≥22.9 kg/m² had significantly higher visual analog scale (VAS) scores, particularly at follow-up, suggesting that higher body weight may exacerbate chronic scrotal pain. This finding highlights the potential impact of mechanical stress and inflammation associated with obesity on the pelvic and scrotal region, which can contribute to or exacerbate chronic discomfort.

While research on the direct role of BMI in chronic orchialgia is limited, several studies have indicated that increased BMI can negatively impact various pain conditions, including musculoskeletal and neuropathic pain. The extra weight can lead to increased pressure on the pelvic floor, lumbar spine and lower extremities, which can indirectly affect the scrotal contents through nerve compression and increased mechanical stress. This is consistent with the findings of Davis et al. (1990), who found that mechanical factors, including body weight, may contribute to chronic scrotal pain through relayed pain mechanisms or local inflammation.[1] Sigalos and Pastuszak (2017) also pointed out the complexity of chronic orchialgia, where both local and systemic factors contribute to persistent pain.[79] A study by Vincent et al. (2010) found that weight reduction in obese individuals resulted in lower pain intensity and improved physical function.[95] Our results suggest that a higher BMI not only leads to mechanical stress, but also increases the inflammatory response in the scrotal contents, making pain management more difficult.

Conservative therapy : Mainstay of chronic orchialgia treatment.

In our study, the majority of patients (81.2%) received medical treatment, while only 8.3% underwent surgical intervention. This reflects the prevailing consensus that conservative therapy should be the primary approach for managing persistent orchialgia, consistent with the recommendations of Levine et al. (2010).[9] Non-steroidal anti-inflammatory drugs (NSAIDs) were commonly employed, along with tricyclic antidepressants (such as amitriptyline) or anticonvulsants (such as pregabalin), which have been found effective in treating neuropathic pain. Scrotal support was also provided to reduce discomfort. Additionally, antibiotics were administered when there was suspicion of an infection, which is a standard practice in treating suspected bacterial etiologies. This approach underscores the importance of starting with less invasive treatments and reserving surgery for cases where conservative methods fail to provide relief.

Surgical intervention: Relieved symptoms in selected patients.

In our study, 15 of 181 patients underwent surgical procedures, with surgery reserved for those who had an inguinal hernia, hydrocele or refractory pain that did not respond to conservative treatment. The most common surgical procedures were hernia sac eversion (40%) in patients with hydrocele and hernioplasty (20%) in patients with inguinal hernia. In addition, laparoscopic varicocelectomy was performed in two patients (13.3%) for whom conservative treatment did not provide pain relief. These operations have been shown to be effective in relieving pain in several cases. However, Levine et al (2010) point out that surgical interventions should be used with caution as they can have unpredictable consequences, so surgery should only be considered as a last resort after less invasive options have been exhausted.[9] This is consistent with the treatment approach in our study, where surgery was primarily reserved for patients with certain anatomical causes or those who did not respond to medical treatment.

Microsugical denervation of cord: Further longer duration study needed for this important surgical modality.

Microsurgical denervation of the spermatic cord (MSCD) has been shown to be a viable alternative for patients with persistent scrotal pain who do not respond to pharmacologic therapies. In a study by Chaudhary et al (2019), a success rate of 81.57% in complete pain relief after MSCD was documented, showing comparable results to other treatment methods. MSCD works by interrupting

the nerve pathways that transmit pain signals while preserving the testicle and its physiological functions.[83] Despite its success, Parekattil et al (2010) pointed out that the effectiveness of MSCD may be limited in cases where central sensitization is present.[20] This is a condition in which chronic pain persists even after the original injury or inflammation has subsided.

Further research into the neuropathic mechanisms underlying chronic orchialgia has highlighted the complexity of this condition. Woolf and Salter (2000) explained that chronic pain can persist long after the original injury due to changes in the central nervous system.[94] This phenomenon, known as central sensitization, leads to increased pain sensitivity and spontaneous nerve activity, even in the absence of external stimuli. These findings underscore the importance of addressing both peripheral and central mechanisms in the treatment of chronic orchialgia, as patients with central sensitization may not benefit as much from surgical interventions such as MSCD. This emphasises the need for a tailored treatment approach that combines both pharmacological and surgical options and is tailored to the individual patient's condition.

Pain clinic referral : selected patients got further decrease in pain intensity.

Our study suggests that chronic orchialgia encompasses not only nociceptive pain but also neuropathic elements. In cases of idiopathic orchialgia or discomfort following surgical procedures such as vasectomy, nerve entrapment or degeneration can occur, as noted by Masarani and Cox (2003).[49] This neuropathic component of chronic orchialgia is further supported by Parekattil

et al. (2010), who identified degeneration of nerve fibers in the spermatic cord, emphasizing the need for more targeted therapies.[20]

In our study, four patients were referred to a pain clinic for further management of their chronic orchialgia. Among them, two patients were treated with genito-femoral nerve blocks, one with antibiotic infiltration into the spermatic cord, and one with L1-L2 pulse radiofrequency therapy. All four patients experienced a significant reduction in pain intensity, highlighting the importance of a multidisciplinary approach that includes specialized pain management techniques for individuals suffering from neuropathic pain in orchialgia. These findings reinforce the complexity of chronic orchialgia, which may require personalized treatment strategies, particularly for cases with a neuropathic origin.

Psychological therapy: Important component of chronic orchialgia management mainly in idiopathic subjects.

The psychological impact of persistent orchialgia is significant. In our study, 8.3% of patients were referred for psychiatric treatment, highlighting the significant psychological burden associated with persistent testicular pain. Chronic pain is often associated with anxiety, sadness and reduced quality of life, as shown by Lian et al. (2017).[82] Engeler et al. (2013) emphasized the need to consider psychosocial aspects in the treatment of persistent pelvic pain, including orchialgia, as psychological distress can increase the perception of pain.[78]

Psychosocial assessments, including inquiring about likely secondary gains, disabilities, and signs of melancholy, are essential in the overall assessment of individuals with chronic orchialgia. Davis et al (1990) found that a multidisciplinary strategy that includes psychological support can improve patients' ability to manage their symptoms and improve overall treatment outcomes.[1]

Limitations and future perspectives

Although our research provides important insights into the causes and treatment of persistent orchialgia, it has some limitations. The study was conducted at a single institution, which limits the applicability of our findings. In addition, the duration of follow-up was rather short and the long-term consequences were not investigated. Future research should focus on evaluating the long-term efficacy of different treatment modalities and investigating new therapeutics, including nerve blocks and neuromodulation, for the treatment of chronic orchialgia.

In addition, the influence of psychological elements in chronic orchialgia needs to be further explored. Lian et al (2017) argued for further investigation into the possible psychological comorbidities associated with persistent testicular pain and the interplay between these variables and physical symptoms. Incorporating psychological care into the treatment framework for chronic orchialgia may improve patient outcomes and quality of life.[82]

CONCLUSION

Chronic orchialgia is a significant problem for physicians, characterized by a variety of etiologies and variable treatment outcomes. Our study contributes to the growing literature by identifying various etiologies. In the study of 181 patients with chronic orchialgia, varicocele was identified as the predominant etiology, affecting 68 patients (37.6%), followed by idiopathic cases affecting 44 patients (24.3%). Other causes were epididymal cysts (25 patients, 13.8%), epididymo-orchitis (17 patients, 9.4%), chronic pelvic pain syndrome (8 patients, 4.4%), epididymitis (6 patients, 3.3%) and hydrocele (6 patients, 3.3%). A smaller percentage had other causes (7 patients, 3.8%). Out of 181 patients, 18 patients (9.94%) were having multiple etiologies.

The VAS score decreased significantly after the multimodal treatment approach. Drug treatment is effective in most cases, but surgical intervention is essential for certain patients. A multidisciplinary approach, as recommended in many studies, is crucial for optimizing patient outcomes and improving the quality of life of those affected by chronic orchialgia.

Comorbidities and BMI were significant predictors of pain intensity, highlighting the need for personalized treatment methods that address both physical and psychological aspects.

Clinicians must utilize a multidisciplinary strategy that includes both medical and psychological support to effectively treat chronic orchialgia and improve patient outcomes.

SUMMARY

Chronic orchialgia is a chronic and debilitating condition that affects a significant percentage of the male population and accounts for 2.5-4% of urology clinic visits worldwide. It is chronic testicular discomfort that lasts longer than three months and significantly affects physical, mental and sexual health, reducing overall quality of life. The causes of chronic orchialgia are varied and include varicocele, epididymitis, infection, trauma and post-operative complications such as vasectomy or hernia repair. In some cases, up to 50% of orchialgias are idiopathic, i.e. no definitive explanation can be found. Neuropathic pain due to nerve damage or dysfunction is increasingly recognized as a major contributor to chronic orchialgia, with pain persisting long after the original injury has resolved.

Due to the complex nature of chronic orchialgia, treatment often requires a multimodal strategy. Initial therapy often includes conservative treatment with non-steroidal anti-inflammatory drugs (NSAIDs), scrotal support, antibiotics if infection is detected, and medications for neuropathic pain, such as tricyclic antidepressants or anticonvulsants. When conservative therapies are ineffective, surgical interventions such as varicocelectomy, hernioplasty or microsurgical denervation of the spermatic cord (MSCD) may be considered, especially in patients suffering from persistent symptoms that do not respond to pharmacologic therapy. The financial and emotional toll of persistent orchialgia is considerable, with repeated physician visits, diagnostic tests and therapies resulting in high healthcare costs. Further studies are needed to establish

standardized treatment procedures and to better understand the causes of the disease. In addition, regional differences in the prevalence and etiology of chronic orchialgia underscore the need for region-specific research to tailor treatment strategies to local populations.

This prospective observational study, conducted at the All-India Institute of Medical Sciences (AIIMS), Bhopal, from March 2023 to September 2024, aimed to analyze the multiple etiological variables associated with chronic orchialgia and evaluate the efficacy of multimodal treatment modalities. The study involved 181 male patients aged 18 to 80 years who presented to the urology outpatient clinic for initial assessment of persistent testicular symptoms. The exclusion criteria were acute orchialgia, testicular injuries, abscesses, acute prostatitis or testicular neoplasms. Patients were treated for three months with NSAIDs (diclofenac 50 mg twice daily for two weeks) and either amitriptyline (25-75 mg) or pregabalin (75-150 mg) upto three months. Surgical interventions were provided for patients who did not respond to drug therapy, while psychological counseling or referrals to pain clinics were offered as needed. Patients were monitored at 15 days, six weeks and three months, with pain intensity assessed at each appointment and change at three months using the visual analog scale (VAS).

The study population was predominantly young, with 48.6% of patients aged between 21 and 30 years. The majority of patients had left-sided testicular pain (45.9%), but 27.1% reported right-sided pain and another 27.1% reported bilateral pain. Almost half of the patients (48.1%) had symptoms for a duration

of up to six months, while 25.4% reported that their problems lasted for one to five years. The mean duration of symptoms was 24.26 months. Varicocele was recognized as the predominant etiology of chronic orchialgia, affecting 37.6% of patients, followed by idiopathic causes (24.3%), epididymal cysts (13.8%), epididymo-orchitis (9.4%), chronic pelvic pain syndrome (4.4%) and epididymitis (3.3%). Hydrocele and other etiologies were rare. A large proportion of patients (81.2%) were treated conservatively with medication, while 8.3% needed surgical intervention. A further 8.3% were referred to psychiatry for significant emotional or psychological problems, while 2.2% were referred to a pain clinic for specialist treatment.

The results showed that the pain decreased significantly after three months of therapy. The initial mean VAS score was 3.64, which decreased to 1.17 after three months, indicating a statistically significant improvement ($p < 0.001$). Among the surgical patients, the predominant operations were sac eversion (40%), hernioplasty (20%), and varicocelectomy (13.3%), among others. The research indicated that age did not substantially influence pain reduction, with comparable results seen in individuals aged ≤40 and >40 years. Patients with a higher body mass index (BMI ≥22.9 kg/m²) had significantly higher VAS scores both at baseline and at follow-up ($p = 0.002$). The prevalence of comorbidities, including other health disorders, correlated with increased pain intensity ($p = 0.002$), suggesting that these variables may exacerbate chronic orchialgia.

Binary logistic regression analysis revealed that symptom duration and comorbidities were important predictors of moderate to severe pain in individuals with chronic orchialgia. Longer symptom duration generally decreased the likelihood of severe pain, while the presence of comorbidities significantly increased the likelihood of moderate to severe pain. Additional characteristics such as age, BMI, type of symptoms, different etiologies and previous therapies had no significant effect on pain intensity.

This study emphasizes the complexity of chronic orchialgia and identifies varicocele as the primary etiology in the Central Indian population. The study demonstrates the efficacy of a multimodal therapeutic strategy in reducing pain intensity. Conservative pharmacologic therapy was beneficial for most patients; however, a subgroup needed surgical treatment. The results emphasize the importance of a multidisciplinary strategy in the management of chronic orchialgia that addresses both the medical and psychological dimensions of the disease to improve patient outcomes and enhance quality of life. Increased BMI and the presence of comorbidities were significant predictors of pain intensity, highlighting the need for tailored treatment regimens that take these elements into account. Further studies are needed to establish standardized treatment procedures and improve our understanding of the causes of the disease.

REFERENCES

1. Davis B.E., Noble M.J., Weigel J.W., Foret J.D., Mebust W.K. Analysis and management of chronic testicular pain. *J Urol* 1990;143: 936–939
2. Polackwich AS, Arora HC, Li J, Levine L, Tojuola B, Parekattil S, Shoskes DA. Development of a clinically relevant symptom index to assess patients with chronic orchialgia/chronic scrotal content pain. Transl Androl Urol. 2018 May;7(Suppl 2):S163-S168.
3. Shoskes DA, Calixte N, Tadros N, Li J, Parekattil S. Validation of the Chronic Orchialgia Symptom Index for Men With Chronic Orchialgia/Chronic Scrotal Contents Pain. Urology. 2018 Sep;119:39-43
4. Calixte N, Brahmbhatt J, Parekattil S. Chronic Testicular and Groin Pain: Pathway to Relief. Curr Urol Rep. 2017 Sep 02;18(10):83.
5. Leslie SW, Sajjad H, Siref LE. Chronic Testicular Pain and Orchalgia. [Updated 2023 May 30]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK482481/
6. Calixte N, Tojuola B, Kartal I, Gudeloglu A, Hirsch M, Etafy M, Mendelson R, Djokic B, Sherba S, Shah K, Brahmbhatt J, Parekattil S. Targeted Robotic Assisted Microsurgical Denervation of the Spermatic Cord for the Treatment of Chronic Orchialgia or Groin Pain: A Single Center, Large Series Review. J Urol. 2018 Apr;199(4):1015-1022.

7. Redmond EJ, Mac Namara FT, Giri SK, Flood HD. Blunt testicular trauma - is surgical exploration necessary? Ir J Med Sci. 2018 Nov;187(4):1109-1113.
8. Campbell JN, Meyer RA. Mechanisms of neuropathic pain. Neuron. 2006 Oct 5;52(1):77-92. doi: 10.1016/j.neuron.2006.09.021. PMID: 17015228; PMCID: PMC1810425.
9. Levine L. Chronic orchialgia: evaluation and discussion of treatment options. Ther Adv Urol 2010;2:209-14.
10. Trojian TH, Lishnak TS, Heiman D. Epididymitis and orchitis: an overview. Am Fam Physician 2009;79:583-7.
11. Pentyala S, Lee J, Yalamanchili P, et al. Testicular torsion: a review. J Low Genit Tract Dis 2001;5:38-47
12. Holtel M, Baranello RJ Jr, Hale A, Springhart P. Use of Spermatic Cord Block Systematically Identifies a Paraspinal Tumor as Source of Orchialgia. Rev Urol. 2019;21(1):49-52. PMID: 31239833; PMCID: PMC6585180.
13. Tan WP, Levine LA. What Can We Do for Chronic Scrotal Content Pain? World J Mens Health. 2017 Dec;35(3):146-155. doi: 10.5534/wjmh.17047. PMID: 29282906; PMCID: PMC5746485.
14. Chakrabarty S, Biswas S, Maiti T, Das A, Mandal A, Banerjee P. Pregabalin and Amitriptyline as Monotherapy or as Low-Dose Combination in Patients of Neuropathic Pain: A Randomized, Controlled

Trial to Evaluate Efficacy and Safety in an Eastern India Teaching Hospital. Ann Indian Acad Neurol. 2019 Oct-Dec;22(4):437-441.

15. Strom KH, Levine LA. Microsurgical denervation of the spermatic cord for chronic orchialgia: long-term results from a single center. *J Urol.* 2008;180:949–953

16. Murthy PB, Parekh NV, Vij SC, Shoskes DA. Microscopic spermatic cord denervation for chronic orchialgia/chronic scrotal content pain: operative outcomes and predictors of failure. Transl Androl Urol. 2020 Oct;9(5):1931-1936. doi: 10.21037/tau-20-561. PMID: 33209657; PMCID: PMC7658118.

17. Belanger GV, VerLee GT. Diagnosis and Surgical Management of Male Pelvic, Inguinal, and Testicular Pain. *Surg Clin North Am* 2016;96:593-613.

18. Levine LA, Hoeh MP. *Evaluation and Management of Chronic Scrotal Content Pain Curr Urol Rep* 2015;16:36.

19. Karayannis NV, Baumann I, Sturgeon JA, et al. The impact of social isolation on pain interference: a longitudinal study. Ann Behav Med 2019; 53: 65–74.

20. Parekattil SJ, Ergun O, Gudeloglu A. Management of Chronic Orchialgia: Challenges and Solutions – The Current Standard of Care. *Res Rep Urol*. 2020;12:199-210

21. Hakenberg OW, Wirth MP. Chronic pelvic pain in men. Urol Int 2002;68:138-43

22. Mathias SD, Kuppermann M, Liberman RF, et al. Chronic pelvic pain: prevalence, health-related quality of life, and economic correlates. Obstet Gynecol 1996;87:321-7.

23. Hedelin H, Johannisson H, Welin L. Prevalence of the chronic prostatitis/chronic pelvic pain syndrome among 40-69-year-old men residing in a temperate climate. Scand J Urol 2013;47:390-2.

24. Zermann DH, Ishigooka M, Doggweiler R, et al. Neurourological insights into the etiology of genitourinary pain in men. J Urol 1999;161:903-8.

25. Strebel RT, Leippold T, Luginbuehl T, et al. Chronic scrotal pain syndrome: management among urologists in Switzerland. Eur Urol 2005;47:812-6.

26. Ciftci H, Savas M, Yeni E, et al. Chronic orchialgia and associated diseases. Curr Urol 2010;4:67-70

27. Davis BE, Noble MJ, Weigel JW, et al. Analysis and management of chronic testicular pain. J Urol 1990;143:936-9

28. Hong MK, Corcoran NM, Adams SJ. Understanding chronic testicular pain: a psychiatric perspective. ANZ J Surg 2009;79:676-7.

29. Schover LR. Psychological factors in men with genital pain. Cleve Clin J Med 1990;57:697-700

30. Hagerty JA, Yerkes EB. Pediatric scrotal masses. Clin Pediatr Emerg Med 2009;10:50-5. [Crossref]

31. Eyre RC, O'Leary MP, Eamranond P. Evaluation of nonacute scrotal pathology in adult men. Available online: http://www.uptodate.com/contents/evaluation-of-nonacute-scrotal-pathology-in-adult-men?selectedTitle=1

32. Gordhan CG, Sadeghi-Nejad H. Scrotal pain: evaluation and management. Korean J Urol 2015;56:3-11.

33. Morris C, Mishra K, Kirkman RJ. A study to assess the prevalence of chronic testicular pain in post-vasectomy men compared to non-vasectomised men. J Fam Plann Reprod Health Care 2002;28:142-4.

34. Grant AM, Scott N, O'Dwyer P. Five-year follow-up of a randomized trial to assess pain and numbness after laparoscopic or open repair of groin hernia. British journal of surgery 2004;91:1570-4.

35. Brooks DC, Obeid A, Hawn M. Classification, clinical features and diagnosis of inguinal and femoral hernias in adults. Available online: https://www.uptodate.com/contents/classification-clinical-features-and-diagnosis-of-inguinal-and-femoral-hernias-in-adults

36. Clemens JQ. Pathogenesis, clinical features, and diagnosis of interstitial cystitis/bladder pain syndrome. Available online: http://www.uptodate.com/contents/pathogenesis-clinical-features-and-diagnosis-of-interstitial-cystitis-bladder-pain-syndrome

37. Planken E, Voorham-van der Zalm PJ, Lycklama ANAA, et al. Chronic testicular pain as a symptom of pelvic floor dysfunction. J Urol 2010;183:177-81. [Crossref] [PubMed]

38. Farrell MR, Dugan SA, Levine LA. Physical therapy for chronic scrotal content pain with associated pelvic floor pain on digital rectal exam. Can J Urol 2016;23:8546-50. [PubMed]

39. MacLennan AH, Taylor AW, Wilson DH, et al. The prevalence of pelvic floor disorders and their relationship to gender, age, parity and mode of delivery. BJOG: An International Journal of Obstetrics & Gynaecology 2000;107:1460-70.

40. Singh V, Sinha RJ. Idiopathic chronic orchialgia - a frustrating issue for the clinician and the patient. Indian J Surg 2008;70:107-10

41. Costabile RA, Hahn M, McLeod DG. Chronic orchialgia in the pain prone patient: the clinical perspective. J Urol 1991;146:1571-4.

42. Wesselmann U, Burnett AL, Heinberg LJ. The urogenital and rectal pain syndromes. Pain 1997;73:269-94

43. Hu JC, Link CL, McNaughton-Collins M, et al. The association of abuse and symptoms suggestive of chronic prostatitis/chronic pelvic pain syndrome: results from the Boston Area Community Health survey. J Gen Intern Med 2007;22:1532-7.

44. Granitsiotis P, Kirk D. Chronic testicular pain: an overview. Eur Urol 2004;45:430-6

45. Lau MW, Taylor PM, Payne SR. The indications for scrotal ultrasound. Br J Radiol 1999;72:833-7.

46. Benson JS, Abern MR, Larsen S, et al. Does a positive response to spermatic cord block predict response to microdenervation of the

spermatic cord for chronic scrotal content pain? J Sex Med 2013;10:876-82.

47. Levine LA, Matkov TG, Lubenow TR. Microsurgical denervation of the spermatic cord: a surgical alternative in the treatment of chronic orchialgia. J Urol 1996;155:1005-7.

48. Heidenreich A, Olbert P, Engelmann UH. Management of chronic testalgia by microsurgical testicular denervation. Eur Urol 2002;41:392-7.

49. Masarani M., Cox R. The aetiology, pathophysiology and management of chronic orchialgia. *BJU Int* 2003;91: 435–437

50. Geneen LJ, Moore RA, Clarke C, Martin D, Colvin LA, Smith BH. Physical activity and exercise for chronic pain in adults: an overview of Cochrane Reviews. Cochrane Database Syst Rev. 2017 Apr 24;4(4):CD011279.

51. Trivedi MH. The link between depression and physical symptoms. Prim Care Companion J Clin Psychiatry. 2004;6(Suppl 1):12-6. PMID: 16001092; PMCID: PMC486942.

52. Gu HF, Tang CK, Yang YZ. Psychological stress, immune response, and atherosclerosis. Atherosclerosis. 2012 Jul;223(1):69-77

53. Calixte N, Brahmbhatt J, Parekattil S. Chronic Testicular and Groin Pain: Pathway to Relief. Curr Urol Rep 2017;18:83.

54. Lee JY, Lee TY, Park HY, et al. Efficacy of epididymectomy in treatment of chronic epididymal pain: a comparison of patients with and without a history of vasectomy. Urology 2011;77:177-82.

55. Pühse G, Wachsmuth JU, Kemper S, Husstedt IW, et al. Chronic pain has a negative impact on sexuality in testis cancer survivors. J Androl 2012;33:886-93.

56. Polackwich AS, Li J, Shoskes DA. Patients with Pelvic Floor Muscle Spasm Have a Superior Response to Pelvic Floor Physical Therapy at Specialized Centers. J Urol 2015;194:1002-6

57. Parekattil SJ, Ergun O, Gudeloglu A. Management of Chronic Orchialgia: Challenges and Solutions - The Current Standard of Care. Res Rep Urol. 2020 Jul 2;12:199-210. doi: 10.2147/RRU.S198785. PMID: 32754451; PMCID: PMC7351977.

58. Sinclair AM, Miller B, Lee LK. Chronic orchialgia: consider gabapentin or nortriptyline before considering surgery. Int J Urol. 2007 Jul;14(7):622-5. doi: 10.1111/j.1442-2042.2007.01745.x. PMID: 17645606.

59. Siu W., Ohl D.A., Schuster T.G. (2007) Long-term follow-up after epididymectomy for chronic epididymal pain. *Urology* 70: 333–335

60. Nangia A.K., Myles J.L., Thomas A.T., Jr (2000) Vasectomy reversal for the post-vasectomy pain syndrome: a clinical and histological evaluation. *J Urol* 164: 1939–1942

61. Werthman P. (2010) Vasectomy reversal for post-vasectomy pain syndrome: a ten-year experience. *J Urol* 183(Suppl): e752–e752

62. Myers S.A., Mershon C.E., Fuchs E.F. (1997) Vasectomy reversal for the treatment of the post-vasectomy pain syndrome. *J Urol* 157: 518–518

63. Heidenreich A., Olbert P., Engelmann U.H. (2002) Management of chronic testalgia by microsurgical testicular denervation. *European Urol* 41: 392–397

64. Levine L.A., Matkov T.G. (2001) Microsurgical denervation of the spermatic cord as primary surgical therapy for the treatment of chronic orchialgia. *J Urol* 165: 1927–1930

65. Strom K.H., Levine L.A. (2008) Microsurgical denervation of the spermatic cord (MDSC) for chronic orchialgia: long-term results from a single center. *J Urol* 180: 949–953

66. Devine C.J., Jr, Schellhammer P.F. (1978) The use of microsurgical denervation of the spermatic cord for orchialgia. *Trans Amer Ass Genito-Uro Surg* 70: 149–149

67. Starke NR, Costabile RA. Medical management of chronic orchialgia. Transl Androl Urol. 2017 May;6(Suppl 1):S48-S50. doi: 10.21037/tau.2017.05.18. PMID: 28725618; PMCID: PMC5503915.

68. Lowe G. Extirpative surgery for chronic orchialgia: is there a role? Transl Androl Urol. 2017 May;6(Suppl 1):S2-S5. doi: 10.21037/tau.2017.03.37. PMID: 28725610; PMCID: PMC5503920.

69. Lim JA, Choi SH, Lee WJ, Jang JH, Moon JY, Kim YC, Kang DH. Cognitive-behavioral therapy for patients with chronic pain: Implications of gender differences in empathy. Medicine (Baltimore). 2018 Jun;97(23):e10867. doi: 10.1097/MD.0000000000010867. PMID: 29879022; PMCID: PMC5999451.

70. Calixte N, Brahmbhatt J, Parekattil S. Genital pain: algorithm for management. Transl Androl Urol. 2017 Apr;6(2):252-257.

71. Strom KH, Levine LA. Microsurgical denervation of the spermatic cord for chronic orchialgia: long-term results from a single center. J Urol 2008;180:949-53. [Crossref] [PubMed]

72. Levine LA, Matkov TG, Lubenow TR. Microsurgical denervation of the spermatic cord: a surgical alternative in the treatment of chronic orchialgia. J Urol 1996;155:1005-7.

73. Sun HH, Tay KS, Jesse E, et al. Microsurgical Denervation of the Spermatic Cord: A Historical Perspective and Recent Developments. Sex Med Rev 2022;10:791-9.

74. Kavoussi PK. Validation of targeted microsurgical spermatic cord denervation: comparison of outcomes to traditional complete microsurgical spermatic cord denervation. Asian J Androl 2019;21:319-23.

75. Jensen MP, Moore MR, Bockow TB, Ehde DM, Engel JM. Psychosocial factors and adjustment to chronic pain in persons with physical disabilities: a systematic review. Arch Phys Med Rehabil. 2011 Jan;92(1):146-60. doi: 10.1016/j.apmr.2010.09.021. PMID: 21187217; PMCID: PMC3028590.

76. Keoghane SR, Sullivan ME. Chronic scrotal pain: a diagnostic and treatment dilemma. BJU Int. 2010;106(5):682-7.

77. Kumar P, Majumdar D, Kapoor A. Chronic testicular pain: causes, management principles and recent concepts. Cochrane Database Syst Rev. 2010;12

78. Engeler D, Baranowski AP, Elneil S, et al. The 2012 European Association of Urology guidelines on chronic pelvic pain: management of patients with chronic pelvic pain. Eur Urol. 2013;64(1):77-83.

79. Sigalos JT, Pastuszak AW. Epidemiology, diagnosis, and evaluation of chronic orchialgia. Transl Androl Urol. 2017;6

80. Sinha RK, Ramasamy R. Post-vasectomy pain syndrome: diagnosis, management, and treatment options. Urol Clin North Am. 2017;44(4):543-53.

81. Rottenstreich, M., Glick, Y. & Gofrit, O.N. Chronic scrotal pain in young adults. *BMC Res Notes* **10**, 241 (2017). https://doi.org/10.1186/s13104-017-2590-0

82. Lian F, Sun H, Tang H, Guo X. Psychological perspectives in patients with chronic orchialgia: a review of treatment options. J Urol. 2017;198(5):1045-9.

83. Chaudhari R, Sharma S, Khant S, Raval K. Microsurgical Denervation of Spermatic Cord for Chronic Idiopathic Orchialgia: Long-Term Results from an Institutional Experience. World J Mens Health. 2019 Jan;37(1):78-84. doi: 10.5534/wjmh.180035. Epub 2018 Sep 10. PMID: 30209898; PMCID: PMC6305859.

84. Mwamukonda K, Lentino C, Murthy S, et al. Mental health diagnoses and chronic orchialgia: is there a correlation? Urology. 2019;127:46-51.

85. Uribe-Arcila J. F., Delgado-Montoya A., Gaviria-Gil F. Etiology of testicular pain 2019: Classification into ten logical subgroups. Rev Mex Urol. 2020;80(4):pp 1-19

86. Murthy S, Holt SK, Wright JL, et al. Outcomes of microscopic spermatic cord denervation for chronic scrotal content pain: a 10-year experience. J Urol. 2020;204(5):1049-55.

87. Mondschein M, Fraiman M, Szabo S. Management of chronic testicular pain: a literature review and proposed treatment pathway. Urology. 2020;144:54-62.

88. Oh MM, Lee JY, Park MG, et al. Chronic scrotal content pain: current understanding and future directions. Nat Rev Urol. 2021;18(7):431-44.

89. Khalafalla K, Arafa M, Elbardisi H, Majzoub A. Non-pharmacological treatments for chronic orchialgia: A systemic review. Arab J Urol. 2021 Aug 4;19(3):401-410.

90. Newman D P, Tinkham N H, Sterbis J R, et al. Successful Resolution of Chronic Testicular Pain With an Impairment-Based Treatment Program: A Case Study With One-Year Follow-Up. Cureus 2021;13(3): e13850. doi:10.7759/cureus.13850

91. Ergun O, Gudeloglu A, Parekattil SJ. Management of chronic orchialgia: review of current clinical practice. AME Med J 2023;8:22.

92. Kravchick S, Lustig D, Vaserman M, et al. Simplified diagnostic and treatment approach for chronic scrotal content pain. J Urol. 2024;211(1):101-9.

93. Mohamed, M.A., Abraha, D., Olasinde, A.A. *et al.* Testicular salvageability and its predictors among patients with testicular torsion in a resource limited setting: a multicentre longitudinal study. *BMC Surg* 2023;23: 248.

94. Woolf CJ, Ma Q. Nociceptors—noxious stimulus detectors. *Neuron.* 2007;55:353–64

95. Vincent HK, Heywood K, Connelly J, Hurley RW. Obesity and weight loss in the treatment and prevention of osteoarthritis. PM R. 2012 May;4(5 Suppl):S59-67.

Appendix -1

Study Pro-forma

Title of the study :

ENROLLING PATIENTS IN OPD

PATIENT PROFILE

PATIENT SERIAL NUMBER:
CR NO:
AGE :
BMI :
OCCUPATION :
MARITAL STATUS:
ADDRESS :
CONTACT NO :
SYMPTOM DURATION :
HISTORY:
OTHER UROLOGICAL SYMPTOMS : Frequency, Urgency, Urge incontinence, Nocturia, Poor stream, Intermittency, Straining during micturition, Sense of incomplete voiding, Flank pain etc.
CO-MORBIDITIES : DM, HTN, BPH etc.
SCORING : USING VAS SCORE AT ADMISSION AND THREE MONTHS.
At admission-
At 3 months-

EXAMINATION

Skin :
Prepuce :
Meatus :
Urethra :
Testis :
Cord :
Epididymis :
Digital rectal examination:

INVESTIGATIONS :

Urine-routine/microscopy.
Urine culture/sensitivity (In selected patients).
USG scrotum with Doppler
USG Abdomen/ KUB (In selected patients)
Serum PSA (In selected patients)

Appendix -2

Participant Information Sheet

STUDY TITLE: TO EVALUATE VARIOUS ETIOLOGIES OF CHRONIC ORCHIALGIA AND ITS RESPONSE TO MULTIMODAL THERAPY IN CENTRAL INDIA: A PROSPECTIVE OBSERVATIONAL STUDY

STUDY INVESTIGATORS:

Student: Dr DHIRENDRA YADAV, Senior resident (M.Ch), Department of Urology.

Guide: **Dr. Devashish Kaushal,** Additional Professor and Head, Department of Urology, **Co-guides Dr. Anuj Jain,** Additional Professor, Department of Anaesthesiology, **Dr. Kumar Madhavan,** Associate Professor, Department of Urology, AIIMS Bhopal, **Dr. Snehil Gupta,** Associate Professor, Department of Psychiatry, AIIMS, Bhopal.

Introduction:

Chronic orchialgia, persistent testicular pain lasting over three months, has various causes ranging from infections to nerve-related issues. Its management often requires a multimodal approach due to the complexity of underlying etiologies. In Central India, limited data exists on its causes and treatment responses, prompting the need for this study.

Purpose of the study:

The purpose of this prospective observational study is to evaluate the various etiologies of chronic orchialgia in patients from Central India and assess their response to multimodal therapy. By identifying underlying causes and analyzing treatment outcomes, the study aims to provide insights into effective management strategies for improving patient care and quality of life in this region.

Do I have to take part?

Participation in this research is entirely voluntary. A decision to not take part, or to withdraw at any time, will not affect your rights or medical care in any way.

What is expected of me if I take part?

If you take part in this study, you will undergo a thorough evaluation to determine the cause of your chronic orchialgia. You will receive multimodal therapy based on your condition and will be monitored regularly for your response to treatment. Your participation will contribute to improving treatment strategies.

How long will my part in the study last?

Your participation in the study would last for 3 months approximately.

Do I have to come for extra visits or undergo extra investigations for the study?

You will not be required to come for additional visits and no extra investigations will be performed other than what performed routinely for patients presenting with lower urinary tract symptoms to urology clinic.

What are the possible benefits in taking part?

This study will provide valuable insights into the diverse causes of chronic orchialgia and the effectiveness of multimodal therapy in treating it. By identifying optimal management strategies, the study aims to improve patient outcomes, reduce pain, and enhance quality of life for those suffering from chronic orchialgia in Central India.

What are the possible disadvantages and risks of taking part?

There are no major foreseeable disadvantages or risks because of the study. There may be risk of loss of privacy and confidentiality of information collected even though all possible measures will be taken to ensure safe data storage and access.

What happens to the information collected from me?

All information collected will be kept strictly confidential and not shared with anyone. Results from the study will be reported as group data and will not identify you in any way.

What if I change my mind regarding participation in the study?

You are entitled to change your mind and withdraw at any time during the study without any disadvantage or penalty.

Whom do I contact for more information or if I have further questions or concerns?

If you want any information or have questions or concerns, you can contact:

Dr. DHIRENDRA YADAV.
Senior Resident (Mch),
Department of Urology, AIIMS, Bhopal.
(9532981586, dhir156@gmail.com).

Dr. Shashank Purwar
Member Secretary,
Institute Ethics Committee – Student Research
(7773010099, ihecpgr@aiimsbhopal.edu.in)

Appendix -3

Participant Information Sheet (Hindi)

अध्ययन का शीर्षक: मध्य भारत में क्रोनिक ऑर्कियलजिया के विभिन्न एटियलजि और मल्टीमॉडल थेरेपी के प्रति इसकी प्रतिक्रिया का मूल्यांकन: एक संभावित अवलोकन अध्ययन

अध्ययन अन्वेषक:

छात्र: डॉ. धीरेंद्र यादव, वरिष्ठ रेजिडेंट (एम.सीएच), यूरोलॉजी विभाग।

मार्गदर्शक: डॉ. देवाशीष कौशल, अतिरिक्त प्रोफेसर और प्रमुख, यूरोलॉजी विभाग, सह-मार्गदर्शक डॉ. अनुज जैन, अतिरिक्त प्रोफेसर, एनेस्थिसियोलॉजी विभाग, डॉ. कुमार माधवन, एसोसिएट प्रोफेसर, यूरोलॉजी विभाग, एम्स भोपाल, डॉ. स्नेहिल गुप्ता, एसोसिएट प्रोफेसर, मनोचिकित्सा विभाग, एम्स, भोपाल।

परिचय:

क्रोनिक ऑर्कियलजिया, तीन महीने से अधिक समय तक रहने वाला लगातार वृषण दर्द, संक्रमण से लेकर तंत्रिका संबंधी मुद्दों तक के विभिन्न कारण हैं। अंतर्निहित एटियलजि की जटिलता के कारण इसके प्रबंधन के लिए अक्सर मल्टीमॉडल दृष्टिकोण की आवश्यकता होती है। मध्य भारत में इसके कारणों और उपचार प्रतिक्रियाओं पर सीमित डेटा मौजूद है, जिससे इस अध्ययन की आवश्यकता हुई।

अध्ययन का उद्देश्य:

इस संभावित अवलोकन अध्ययन का उद्देश्य मध्य भारत के रोगियों में क्रोनिक ऑर्किएल्जिया के विभिन्न एटियलजि का मूल्यांकन करना और मल्टीमॉडल थेरेपी के प्रति उनकी प्रतिक्रिया का आकलन करना है। अंतर्निहित कारणों की पहचान करके और उपचार परिणामों का विश्लेषण करके, अध्ययन का उद्देश्य इस क्षेत्र में रोगी देखभाल और जीवन की गुणवत्ता में सुधार के लिए प्रभावी प्रबंधन रणनीतियों में अंतर्दृष्टि प्रदान करना है।

क्या मुझे भाग लेना होगा?

इस शोध में भागीदारी पूरी तरह से स्वैच्छिक है। भाग न लेने या किसी भी समय वापस लेने का निर्णय किसी भी तरह से आपके अधिकारों या चिकित्सा देखभाल को प्रभावित नहीं करेगा।

अगर मैं भाग लेता हूँ तो मुझसे क्या अपेक्षा की जाती है?

अगर आप इस अध्ययन में भाग लेते हैं, तो आपके क्रोनिक ऑर्किएल्जिया के कारण को निर्धारित करने के लिए आपका गहन मूल्यांकन किया जाएगा। आपको आपकी स्थिति के आधार पर मल्टीमॉडल थेरेपी दी जाएगी और उपचार के प्रति आपकी प्रतिक्रिया की नियमित रूप से निगरानी की जाएगी। आपकी भागीदारी उपचार रणनीतियों को बेहतर बनाने में योगदान देगी।

अध्ययन में मेरा हिस्सा कितने समय तक चलेगा?

अध्ययन में आपकी भागीदारी लगभग 3 महीने तक चलेगी।

क्या मुझे अध्ययन के लिए अतिरिक्त विजिट के लिए आना होगा या अतिरिक्त जांच करवानी होगी?

आपको अतिरिक्त विजिट के लिए आने की आवश्यकता नहीं होगी और यूरोलॉजी क्लिनिक में निचले मूत्र पथ के लक्षणों वाले रोगियों के लिए नियमित रूप से की जाने वाली जांच के अलावा कोई अतिरिक्त जांच नहीं की जाएगी।

इसमें भाग लेने के संभावित लाभ क्या हैं?

यह अध्ययन क्रोनिक ऑर्किएल्जिया के विभिन्न कारणों और इसके उपचार में मल्टीमॉडल थेरेपी की प्रभावशीलता के बारे में मूल्यवान जानकारी प्रदान करेगा। इष्टतम प्रबंधन रणनीतियों की पहचान करके, अध्ययन का उद्देश्य मध्य भारत में क्रोनिक ऑर्किएल्जिया से पीड़ित लोगों के लिए रोगी के परिणामों में सुधार, दर्द को कम करना और जीवन की गुणवत्ता को बढ़ाना है।

इसमें भाग लेने के संभावित नुकसान और जोखिम क्या हैं?

इस अध्ययन के कारण कोई बड़ा नुकसान या जोखिम नहीं है। एकत्रित की गई जानकारी की गोपनीयता और गोपनीयता के नुकसान का जोखिम हो सकता है, भले ही सुरक्षित डेटा भंडारण और पहुंच सुनिश्चित करने के लिए सभी संभव उपाय किए जाएंगे।

मेरे द्वारा एकत्रित की गई जानकारी का क्या होगा?

एकत्र की गई सभी जानकारी को पूरी तरह से गोपनीय रखा जाएगा और किसी के साथ साझा नहीं किया जाएगा। अध्ययन के परिणामों को समूह डेटा के रूप में रिपोर्ट किया जाएगा और किसी भी तरह से आपकी पहचान नहीं की जाएगी।

अगर मैं अध्ययन में भागीदारी के बारे में अपना विचार बदलूं तो क्या होगा?

आप बिना किसी नुकसान या दंड के अध्ययन के दौरान किसी भी समय अपना विचार बदलने और वापस लेने के हकदार हैं।

अधिक जानकारी के लिए या अगर मेरे पास और प्रश्न या चिंताएँ हैं तो मैं किससे संपर्क करूँ?

अगर आपको कोई जानकारी चाहिए या आपके कोई प्रश्न या चिंताएँ हैं, तो आप संपर्क कर सकते हैं:

डॉ. धीरेंद्र यादव।

वरिष्ठ रेजिडेंट (एमसीएच),

यूरोलॉजी विभाग, एम्स, भोपाल।

(9532981586, dhir156@gmail.com)।

डॉ. शशांक पुरवार

सदस्य सचिव,

संस्थान आचार समिति - छात्र अनुसंधान

(7773010099, ihecpgr@aiimsbhopal.edu.in)

Appendix -4

प्रतिभागी सूचना सहमति प्रपत्र

PARTICIPANT INFORMED CONSENT FORM (PICF).

अध्ययन के लिए प्रतिभागी का पहचान नंबर / Participant Identification Number for Study:

…… …….

अनुसंधान का शीर्षक / Title of Project : **TO EVALUATE VARIOUS ETIOLOGIES OF CHRONIC ORCHIALGIA AND ITS RESPONSE TO MULTIMODAL THERAPY IN CENTRAL INDIA: A PROSPECTIVE OBSERVATIONAL STUDY**

छात्र शोधकर्ता का नाम / Name of Student Investigator : Dr DHIRENDRA YADAV. Tel no.- **9532981586, dhir156@gmail.com**

शोध मार्गदर्शक का नाम / Name of Thesis Guide : Dr Devashish Kaushal. Tel no.-9013518570

मैंने संस्करण संख्या II. दिनांक 20-08-2022 के सूचना पत्रक में दिए गए सभी तथ्यों को सावधानीपूर्वक पढ़ लिया है/ मुझे अपनी भाषा में स्पष्ट रूप से विस्तारपूर्वक समझा दिया गया है, और मैंने तथ्यों को पूर्णतः समझ लिया है। मैं पुष्टि करता हूँ, कि मुझे सवाल पूछने के अवसर प्रदान किए गए। The contents of the information sheet version II dated 20th August 2022 that was provided have been read carefully by me / explained in detail to me, in a language that I comprehend, and I have fully understood the contents. I confirm that I have had the opportunity to ask questions.

मुझे इस अध्ययन की प्रकृति एवं उद्देश्य और इसके संभावित जोखिमों / लाभों तथा अध्ययन की अनुमानित अवधि एवं अन्य प्रासंगिक जानकारी के बारे में विस्तारपूर्वक समझा दिया गया है। मुझे पता है कि इस अध्ययन में मेरी भागीदारी स्वैच्छिक है तथा मैं इस अध्ययन से किसी भी समय बिना कोई कारण बताए, अपना नाम वापस लेने के लिए स्वतंत्र हूं और नाम वापस लेने पर मेरी चिकित्सा देखभाल या कानूनी अधिकारों पर कोई प्रभाव नहीं पड़ेगा। The nature and purpose of the study and its potential risks/benefits and expected duration of the study, and other relevant details of the study have been explained to me in detail. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal right being affected.

मैं समझता हूं कि इस अनुसंधान में मेरी भागीदारी से मेरे बारे में एकत्र की गई जानकारी और मेरे चिकित्सीय दस्तावेजों के किसी भी भाग को एम्स के जिम्मेदार व्यक्तियों द्वारा ही देखा जाएगा। मैं इन व्यक्तियों को मेरे रिकॉर्ड प्राप्त करने की अनुमति प्रदान करता हूँ। I understand that the information collected about me from my participation in this research and sections of

any of my medical notes may be looked at by responsible individuals from AIIMS. I give permission for these individuals to have access to my records.

मैं उक्त अध्ययन में भाग लेने के लिए सहमत हूं। I agree to take part in the above study.

_____

(प्रतिभागी के हस्ताक्षर / बांए अंगूठे का निशान) (Signature / Left Thumb Impression)

दिनांक/Date……स्थान/Place …….....

प्रतिभागी का नाम/Name of the participant ……

पिता/पति/पत्नी का नाम /Son/Daughter/Spouse of……..

डाक का पूरा पता /Complete Postal Address ……

अगर अशिक्षित हो/ If illiterate,

सूचना पत्र को प्रतिभागी को पढ़ा और समझाया गया है, और प्रश्न पूछने का अवसर दिया गया है। मैं पुष्टि करता हूं कि व्यक्ति ने स्वतंत्र रूप से सहमति दी है।

The information sheet has been read and explained to the participant, and given the opportunity to ask questions. I confirm that the individual has given consent freely.

कानूनी रूप से स्वीकार्य प्रतिनिधि अथवा निष्पक्ष गवाह के हस्ताक्षर

Signature of Legally Acceptable Representative or impartial witness:

दिनांक / Date:

एलएआर अथवा निष्पक्ष गवाह का नाम / Name of LAR or impartial witness:

पता/Address:

प्रमाणित किया जाता है कि उक्त सहमति मेरी उपस्थिति में प्राप्त की गई ।

This is to certify that the above consent has been obtained in my presence.

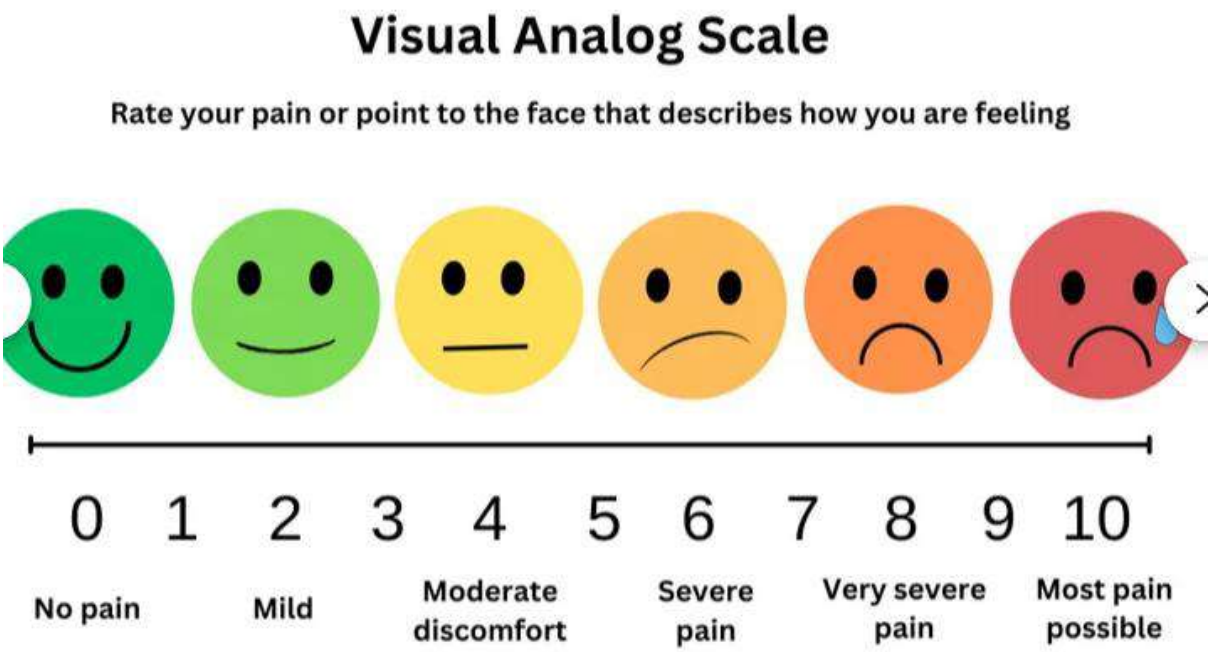
_____

छात्र शोधकर्ता के हस्ताक्षर दिनांक……. स्थान……

Signature of the Student Investigator Date ……

Place ……

Appendix -5


Visual Analog Scale
Rate your pain or point to the face that describes how you are feeling
0 1 2 3 4 5 6 7 8 9 10
No pain
Mild
Moderate discomfort
Severe pain
Very severe pain
Most pain possible

Appendix 6
Master chart

CR NO.	Age	Symptom	Duration	Other symptoms	VAS at presentation	VAS at 3 months	Examination	USG Scrotum	Other investigations	Treatment Modality	Multiple etiologies	M/UM	previous treatment/surgery	co-morbidity	BMI
2.39212E+14	20	B/L Testicular pain	12 months	None	6	2	Normal	WNL	WNL	Medical		UM			18.5
2.39212E+14	22	Left Testicular pain	12 months	None	5	2	Gr 2 Varicocele	Left grade 2 varicocele	WNL	Medical		UM			19
2.39212E+14	18	Left Testicular pain	6 months	Dragging sensation	4	2	Left grade 2 varicocele	Left grade 2 varicocele	WNL	Medical		UM			20
2.39212E+14	30	Right testicular pain	18 months	None	5	4	WNL	WNL	WNL	medical + psychiatry referral		M			25
2.39212E+14	33	B/L Testicular pain	4 months	None	4	1	Left grade 2 varicocele	Right epididymis-orchitis with left grade 2 varicocele	WNL	Medical	Right epididymo-orchitis with left gr 2 varicocele	M			21
2.39212E+14	26	B/L Testicular pain	6 months	Known OCD	4	3	Normal	WNL	WNL	medical + psychiatry referral		UM			19.5
2.39212E+14	24	B/L Testicular pain	3 months	Inability to retract prepuce	5	2	Phimosis with left grade 1 varicocele	Left grade 1 varicocele	WNL	Medical + surgical	phimosis with left gr 1 varicocele	UM			18
2.39212E+14	56	Right testicular pain	24 months	Voiding luts burning MICTURITION,herniorapphy 2 yrs back	7	3	Grade 2 prostatomegaly	WNL	Prostatomegaly-36 cc	Medical		M	herniorapphy 2 years back		27.5
2.39212E+14	57	Right testicular pain	4 months	None	4	1	Cystic swelling over left testis 5x4 cm	Right epididymitis wit epididymal cyst 5x3 mm left spermatocele 5.8x5.6 cm		Medical + surgical	right epididymitis with epididymal cyst left spermatocele	M			23
2.39212E+14	26	Left Testicular pain	3 months	None	5	3	WNL	WNL	WNL	medical + psychiatry referral		UM			20
2.39212E+14	27	B/L Testicular pain	24 months	None	4	1	Left grade 1 varicocele	Bilateral grade 1 varicocele left >right	WNL	Medical		M			18
2.39212E+14	36	Left Testicular pain	36 months	None	4	1	Left grade 1 varicocele	WNL	Grade 3 fatty liver	Medical		M			30

2.39212E+14	33	Left Testicular pain	5 months	Left scrotal swelling	5	2	Left grade 2 varicocele	Left grade 3 varicocele	WNL	Medical		M			21
2.39212E+14	31	Left Testicular pain	12 months	Loss of libido and sub fertility	4	2	Left testis is smaller than right	Bilateral epididymal cyst with left mild hydrocele	WNL	Medical	b/l epididymal cyst with left hydrocele	M			25
2.39212E+14	18	Right testicular pain	18 months	Right groin pain with burning micturition	3	0	Tender right testis and spermatic cord	Right epididymal orchitis with funiculitis	WNL	Medical		UM			18.5
2.39212E+14	65	Right testicular pain	12 months	Storage luts	3	1	Multiple sebaceous cyst over scrotum,Gr 2 prostatomegaly		WNL	Medical	sebaceous cyst with BPH	M			26
2.39212E+14	26	Left Testicular pain	3 months	Left adductor muscle pain	4	1	Left testis slightly retracted, left grade 1 varicocele	Left grade 1 varicocele	WNL	Medical		UM			19.5
2.39212E+14	50	B/L Testicular pain	36 months	Bilateral scrotal swelling	3	0	Bilateral gross hydrocele	Bilateral gross hydrocele,right >left	WNL	Surgical		M			23
2.39212E+14	52	B/L Testicular pain	12 months	Pain in lower abdomen and perineum	4	2	WNL	WNL	WNL	Medical	CPPS	M			28
2.39212E+14	20	Left Testicular pain	3 months	None	3	1	Left grade 2 varicocele with 2x2 cm cystic swelling at upper pole of left testis	Left grade 2 varicocele with funiculitis	WNL	Medical	varicocele with funiculitis	M			20
2.39212E+14	28	Right testicular pain	36 months	Decrease penile tumuscence	4	1	Normal	WNL	WNL	Medical		UM			21.5
2.39212E+14	23	B/L Testicular pain, left >right	36 months	Decrease penile tumuscence, DHAT syndrome, altered bowel habits	2	0	Left grade 2 varicocele	Left grade 2 varicocele	WNL	medical + psychiatry referral		UM			19
2.39212E+14	40	Left Testicular pain	4 months	A/W penile and lower back pain	4	1	Left grade 2 varicocele	Left grade 2 varicocele	WNL	Medical	CPPS	M			26.5
2.39212E+14	27	Left Testicular pain	3 months	Swelling over left testis	3	1	Left grade 2 varicocele	Left grade 2 varicocele	WNL	Medical		UM			18.5
2.39212E+14	22	Left Testicular pain	36 months	Left scrotal swelling	2	0	Left grade 3 varicocele	Left grade 3 varicocele	WNL	Medical		UM			18

2.39212E+14	25	Left Testicular pain	6 months	On and off fever	2	0	A firm swelling 3x2 cm over lower pole of left testis with mild to moderate hydrocele	Collection of 7-8 cc in left scrotal sac with mild hydrocele	WNL	Medical + surgical		UM			22.5
2.39212E+14	21	Right testicular pain	8 months	None	3	0	1x1 cm nodulecystic swelling at lower pole of right testis	Right epididymal cyst	WNL	Medical		UM			19.5
2.39212E+14	66	B/L Testicular pain	12 months	Bilateral scrotal swelling, right flank pain for 7 days. H/ TB present	2	1	Bilateral testis enlargement,bilateral firm mass at upper pole	Left spermatocele 4.6x2.3 cm, right epididymal cyst with right renal calculus 2.9 mm	WNL	Medical	left spermatocele right epididymal cyst right renal calculus	M		history of pulmonary TB	22
2.39212E+14	28	Right testicular pain	36 months	Swelling over right testis,progressing	2	0	Bilateral epididymal cyst right >left	Bilateral epididymal cyst, right - 2x1.8 cm,left0.5x0.5 cm	WNL	Medical		M			24.5
2.39212E+14	50	Right testicular pain	3 months	None	4	0	Bilateral epididymal cyst right >left, grade 1 prostatomegaly	Bilateral epididymal cyst	WNL	Medical		M			21
2.39212E+14	56	Right testicular pain	24 months	luts	2	1	Scar of previous surgery, grade 2 prostatomegaly	WNL	WNL	medical + pain clinic referral		M			30
2.39212E+14	28	Right testicular pain	12 months	None	3	0	WNL	WNL	WNL	Medical		UM			21
2.39211E+14	28	B/L Testicular pain	12 months	Penile tip pain, H/o urethral stone removal	2	0	WNL	WNL	WNL	Medical	CPPS	M	surgery for urethral stone		19.5
2.39212E+14	27	Left Testicular pain	24 months	None	2	0	Left grade 2 varicocele with left indirect inguinal hernia	Left grade 2 varicocele with mild hydrocele with left inguinal hernia	WNL	Medical + surgical	left varicocele with hernia with left mild hydrocele	UM			24
2.39212E+14	27	B/L Testicular pain	8 months	Perineal pain	5	1	WNL	WNL	WNL	Medical	CPPS	UM	perineal pain		21.5

2.39212E+14	48	Left Testicular pain	3 months	Left scrotal swelling	4	1	Left testis enlarged	Left epididymitis	WNL	Medical		M			22.5
2.39212E+14	31	Left Testicular pain	3 months	None	2	0	Left epididymal cyst with left grade 1 varicocele	Left epididymal cyst 1x1 cm		Medical		M			23
2.39212E+14	22	Left Testicular pain	9 months	Burning micturition	2	0	Normal	WNL	Urine r/m- 8-10 wbc/hpf	Medical		UM			21
2.39211E+14	20	B/L Testicular pain	24 months	None	2	0	WNL	Bilateral grade 1 varicocele left >right	WNL	Medical		UM			19
2.39212E+14	51	Left Testicular pain	6 months	None	2	1	Left mil Hydrocele	Left mild hydrocele	WNL	Medical		M			25
2.39212E+14	32	Right testicular pain	4 months	Burning MICTURITION along with straining	3	0	Right testis enlarged with mil tenderness	Right epididymitis	Urine r/m-10-12 wbc/hpf	Medical		M			19.5
2.39212E+14	25	B/L Testicular pain	12 months	Burning micturition	2	0	Normal	WNL	WNL	Medical		UM			20
2.39212E+14	22	B/L Testicular pain	6 months	None	5	2	EUM narrow, left epididymis tender, left cord thickened	Left epididymitis	WNL	Medical		UM			23
2.39212E+14	39	Left Testicular pain	3 months	None	3	0	Left mild tenderness	Left orchitis	WNL	Medical		M			24.5
2.39212E+14	23	B/L Testicular pain	24 months	Decrease penile tumuscence	6	2	Normal	WNL	WNL	medical + psychiatry referral		UM			23.5
2.39212E+14	47	Left Testicular pain	3 months	Penile pain with passage of urethral calculus	4	0	Normal	WNL	WNL	Medical	CPPS	M	passage of urethral calculus		22
2.39212E+14	22	Left Testicular pain	6 months	None	4	1	Left mild tenderness	Left epididymis-orchitis with minimal collection in scrotal sac	WNL	Medical		UM			21
2.39212E+14	67	Right testicular pain	3 months	None	8	2	Phimosis, right testis enlarged, tenderness present	Right epididymal-orchitis	C/S sterile	Medical + Surgical		M		DM	27.5
2.39212E+14	30	Left Testicular pain	3 months	None	2	0	Normal	Left mild hydrocele	WNL	Medical		M			21

2.39212E+14	18	Bilateral testicular pain	24 months	None	3	0	Normal	WNL	WNL	Medical		UM			19
2.39212E+14	47	Right testicular pain	24 Months None		6	2	Normal	WNL	WNL	medical + psychiatry referral		M			28.5
2.39212E+14	34	Right testicular pain	4 months	right lower abdomen pain	3	0	Normal	WNL	WNL	Medical		M			22
2.39212E+14	25	Left Testicular pain	24 months	h/o urolithiasis	2	0	left grade 1 varicocele	left grade 2 varicocele	WNL	Medical		UM	history of urolithiasis		21
2.39212E+14	27	Left Testicular pain	3 months	None	2	0	Left epididymal cyst	Left epididymal cyst 1x1 cm	WNL	Medical		M			21
2.39212E+14	23	Bilateral testicular pain right>left	9 months	None	3	1	Normal	WNL	WNL	Medical		UM			19
2.39212E+14	48	Left Testicular pain	60 months	None	2	0	Normal	WNL	WNL	Medical		M			23
2.39212E+14	24	Left Testicular pain	36 months h/o left hydrocele repair in 2020		5	3	scar present,left grade 2 varicocele	left grade 2 varicocele	WNL	Medical + pain clinic referral		UM	history of hernia repair		21.5
2.39212E+14	38	Left Testicular pain	6 months	None	5	1	left grade 2 varicocele	left grade 2 varicocele	WNL	Medical		M			25
2.39212E+14	30	Left Testicular pain	48 months	None	6	5	Left grade 3 varicocele	Left grade 4 varicocele	WNL	medical + surgical(lap varicocelectomy)		M			23
2.39212E+14	21	Bilateral testicular pain	36 months	left small testis	3	1	left atrophic testis		WNL	Medical		UM			19.5
2.39212E+14	31	Left Testicular pain	3 months	none	2	0	left epididymal cyst	left epididymal cyst 1.3x1.1 cm	WNL	Medical		M			20
2.39212E+14	28	Right testicular pain	60 months	None	3	1	Normal	bilateral epididymal cyst		Medical		M			21
2.39212E+14	25	Right testicular pain	3 months	None	4	2	Normal	WNL	WNL	medical + psychiatry referral		UM			21

2.39212E+14	28	Right testicular pain	60 months	None	1	1	hard lump palpable in right cord,right grade 3 varicocele	well defined lobulated lesion 1.2x0.8 cm	WNL	surgical	right grade 3 varicocele with right cord granuloma	UM			22
2.39212E+14	64	Left Testicular pain	24 months	None	2	0	right hydrocele	b/l hydrocele l>r	WNL	surgical		M			24
2.39212E+14	40	Bilateral testicular pain	12 months	Storage and voiding luts	2	0	grade 1 prostatomegaly	tiny renal concretion	WNL	Medical	b/l renal concretion with BPH	M			25
2.39212E+14	38	Left Testicular pain	6 months	None	5	2	Normal	grade 2 varicocele	WNL	Medical		M			25.5
2.39212E+14	19	Right testicular pain	5 months	Burning micturition	4	1	Normal	Cystitis	WNL	Medical		UM			22
2.39212E+14	54	Right testicular pain	3 months	None	5	2	Right testis enlarged	right epididymo-orchitis/right pyocele	WNL	Medical + surgical	right epididymo-orchitis with pyocele	M			27
2.39212E+14	59	bilateral testicular pain	240 months	Storage and voiding luts	4	2	bilateral epididymal cyst noted	b/l epididymal cyst, gr 2 prostatomegaly	WNL	Medical	epididymal cyst with BPH	M			26.5
2.39212E+14	31	Left Testicular pain	84 months	None	3	0	left gr 2 varicocele	left grade 2 varicocele	WNL	Medical		M			21
2.39212E+14	45	B/L testicular pain	6 months	None	4	1	bilateral enlaged testis	b/l epididymitis	WNL	Medical		M			23
2.39212E+14	32	b/l testicular pain	12 months	generalised body ach, headach,abdominal pain	5	4	Normal	WNL	WNL	medical + psychiatry referral		M			25
2.39212E+14	54	Left Testicular pain	3 months	storage and voiding luts	3	1	Grade 2 prostatomegaly	31 cc prostate	WNL	Medical		M		HTN + BPH	26
2.39212E+14	20	left Testicular pain	3 months	None	2	0	left epididymal cyst	left gr3 varicocele	WNL	Medical		UM			19
2.39212E+14	23	left Testicular pain	6 months	a/w swelling	4	1	left gr 1 varicocele	left gr 2 varicocele	WNL	Medical		UM			18.5
2.39212E+14	29	Left Testicular pain	36 months	Left scrotal swelling	2	0	enlarged left scrotum/hydrocele	left gross hydrocele	WNL	surgical		M			23

2.39212E+14	23	left Testicular pain	6 months	left testicular swelling	1	0	left gr 3 varicocele	left gr 3 varicocele	WNL	Medical		UM			18.5
2.39212E+14	31	Right testicular pain	36 months	None	4	2	Normal	WNL	WNL	medical + psychiatry referral		M			22
2.39212E+14	20	Left Testicular pain	24 months	increased on standing	5	2	Normal	left gr 2 varicocele	WNL	Medical		UM			23
2.39212E+14	24	b/l testicular pain	12 months	incresed urinary frquency, burning micturition	5	2	left epididymal cyst	left epididymal cyst 28 mm	WNL	Medical+ pain clinic referral		UM			21
2.39212E+14	33	Left Testicular pain	12 months	Storage and voiding luts	4	1	left varicocele	left gr 2 varicocele	WNL	Medical		M			25
2.39212E+14	29	Right testicular pain	60 monthsh/o ? Urethral surgery	h/o right ureteric calculus	5	2	right epididymal cyst	WNL	right epididymal cyst 1x1 cm	Medical		UM			23
2.39212E+14	25	b/l testicular pain, right>left	6 months	None	3	0	b/l gr 2 varicocele	b/l gr 2 varicocele	WNL	Medical		UM			20
2.39212E+14	30	Right testicular pain	3 months	h/o endo CLT in 2019	4	2	Normal	WNL	WNL	Medical		M	endo CLT		26
2.39212E+14	23	b/l testicular pain	6 months	h/o renal /vesical calculus	2	0	b/l varicocele, left gr 3, right gr 2	b/l gr 3 varicocele	WNL	Medical		UM	vesical calculus		24
2.39212E+14	21	b/l testicular pain	24 months	on and off right lower abdominal pain	5	3	Normal	WNL	WNL	medical + psychiatry referral		UM			21
2.39212E+14	26	Left Testicular pain	36 months	None	2	1	left gr 3 varicocele	left gr 3 varicocele	WNL	Medical		UM			19
2.39212E+14	20	b/l testicular pain(r>l)	4 months	None	3	0	b/l gr 2 varicocele	left gr 3 varicocele	usg-right small kidney	Medical		UM			18
2.39021E+15	35	Left Testicular pain	12 months	None	5	2	left gr 3 varicocele	left gr 3 varicocele	WNL	Medical		M		DM	27
2.39212E+14	25	Right testicular pain	3 months	urethral discharge	6	3	urethral discharge present	urethral swab-morganella morgani	WNL	Medical		UM	urethral discharge		21
2.39212E+14	20	Right testicular pain	36 months	None	6	2	thickend right spermatic cord	right spermatic cord granuloma 1x0.4 cm	WNL	Medical		UM			24

2.39212E+14	29	Right testicular pain	24 months	None	2	0	Normal	WNL	WNL	Medical		M			21
2.39212E+14	29	Left Testicular pain	3 months	Dragging sensation	1	1	Normal	WNL	WNL	medical + psychiatry referral		UM			24
2.39212E+14	22	b/l testicular pain (right>left)	12 months	on and off burning micturition with suiprapubic pain	5	1	b/l gr 1 varicocele,right mild tenderness	, right epididymitis	WNL	Medical		UM			23
2.39212E+14	21	Right testicular pain	24 months	pain increased with physical activity	3	1	right epididymal cyst	right 2x2 cm epididymal cyst	WNL	Medical		UM			19
2.39212E+14	18	b/l testicular pain	6 months	None	3	0	left gr 3 varicocele	left gr 3, right gr 2 varicocele	WNL	Medical		UM			18.5
2.39212E+14	27	Right testicular pain	48 months	Swelling over right testis	4	1	right gr 1 varicocele	right gr 2 varicocele	WNL	Medical		UM			19
2.39212E+14	35	Left Testicular pain	108 months	swelling over left testis, left open varicocelectomy in 2014	4	2	left gr 3 varicocele	left gr 3 varicocele	WNL	Medical		M	open varicocelectomy		23
2.39212E+14	31	Left Testicular pain	6 months	a/w swelling in left scrotum	6	1	tenderness in left testis and spermatic cord	left epididymo-orchitis	WNL	Medical		M			26
2.39212E+14	23	Left Testicular pain	12 months	None	7	2	mild tenderness over left testis	Left orchitis	WNL	Medical		UM			24
2.39212E+14	20	Right testicular pain	4 months	None	4	1	right testis is smaller than right	WNL	WNL	Medical		UM			22
2.39212E+14	25	b/l testicular pain	120 months	h/o trauma 10 years back	8	2	b/l gr 3 varicocele	b/l gr 3 varicocele	WNL	Medical		UM	trauma 10 year back		25
2.39212E+14	27	b/l testicular pain,(right>left)	12 months	None	2	0	Normal	WNL	WNL	Medical		UM			22
2.39212E+14	30	b/l testicular pain	6 months	on and off left flank pain	7	3	left gr 3 varicocele	left gr 3 varicocele	WNL	Medical		M			21
2.39212E+14	31	right testicular pain	36 months	None	5	2	Normal	b/l microlithiasis	WNL	Medical		M			22
2.39212E+14	24	Left Testicular pain	6 months	None	4	1	left gr 2 varicocele	left gr 3 varicocele	WNL	Medical		UM			18
2.39212E+14	28	Right testicular pain	3 months	decrease penile tumuscence,rightflank pain	6	2	Normal	right renal concretions	WNL	Medical		UM			26

2.39212E+14	29	Right testicular pain	5 months	None	4	1	Normal	right gr1 varicocele,	usg kub- b/l renal concretions, semen analysis - hypospermia	Medical		M			21
2.39212E+14	27	Left Testicular pain	96 months	premature ejaculation	3	1	Normal	left gr 1 varicocele	WNL	Medical		UM			22
2.39212E+14	23	Right testicular pain	6 months	lower abdomen pain	4	2	right epididymal cyst	right epididymal cyst 6mm	WNL	Medical		UM			22.5
2.39212E+14	29	Left Testicular pain	48 months	None	2	2	Normal	WNL	WNL	Medical + psychiatry referral		UM			28
2.39212E+14	50	Right testicular pain	5 months	known diabetic for 8 years	3	1	mild tenderness over right testis	right epididymo-orchitis/right pyocele	WNL	Medical		M		DM	25
2.39212E+14	28	Left Testicular pain	4 months	None	4	1	b/l gr 2 varicocele	b/l gr 3 varicocele	WNL	Medical		UM			21
2.39212E+14	32	b/l testicular pain	12 months	b/l scrotal swelling	1	0	b/l bubunocele	b/l varicocele, right gr 2, left gr 3	WNL	Medical		M			21
2.39212E+14	33	Left Testicular pain		None	4	1	b/l varicocele, left gr 1, right gr 2	b/l gr 2 varicocele	WNL	Medical		M			20
2.39212E+14	25	Right testicular pain		rback pain with right lower limb pain	5	2	Normal	right gr 3 varicocele	WNL	Medical		UM			23
2.39212E+14	20	Left Testicular pain	18 months	premature ejaculation	7	2	left gr 2 varicocele	left gr 3 varicocele	WNL	Medical		UM			22
2.39212E+14	52	Left Testicular pain	84 months	a/w burning micturition	1	0	left gr 2 varicocele	left bgr 2 varicocele		Medical		M			24.5
2.39212E+14	24	Left Testicular pain	6 months	left lower abdomen and left flank pain	9	3	left gr 3 varicocele, left small testis	left gr 3 varicocele		Medical		UM			19.5
2.39212E+14	37	Left Testicular pain	48 months	right testicular nodule	1	0	left gr 3 varicocele, right epididymal cyst	left gr 3 varicocele with right epididymal cyst 1x1 cm	WNL	Medical	Varicocele with epididymal cyst	M			26
2.39212E+14	30	Right testicular pain		pain increases on standing	2	0	Normal	WNL	WNL	Medical		M			24

2.39212E+14	27	b/l testicular pain	3 months	a/w with penile pain	7	3	left gr 1 varicocele	left gr1 varicocele	WNL	Medical		UM			21
2.39112E+14	28	b/l testicular pain	24 months	a/w lower abdomen and perineal pain	4	2	Normal	WNL	WNL	medical + psychiatry referral	CPPS	UM			22.5
2.39212E+14	25	Right testicular pain	5 months	h/o right epididymitis in 2023	1	0	Normal	WNL	WNL	Medical		UM	history of right epididymitis		21
2.39212E+14	22	Left Testicular pain	36 months	a/w left testicular swelling	3	0	left testis enlarged in size, right small atrophic testis	left epididymo-orchitis	WNL	Medical		UM			22
2.39212E+14	46	b/l testicular pain	6 months	None	5	2	right mild hydrocele with left small soft testis	right hydrocele with left orchitis	WNL	Medical	right hydrocele with left orchitis	M			23
2.39212E+14	23	Left Testicular pain	84 months	None	1	0	left gr 2 varicocele	left gr 2 varicocele	WNL	Medical		UM			21
2.39212E+14	19	Right testicular pain	3 months	Storage luts	2	0	Normal	WNL	WNL	Medical		UM			18
2.39212E+14	49	left Testicular pain	6 months	None	4	1	mild tenderness in left testis	left epididymitis	WNL	Medical		M			26.5
2.39212E+14	24	Left Testicular pain	12 months	a/w erectile dysfunction	4	1	left gr 2 varicocele	left gr 3 varicocele	WNL	Medical		UM			21
2.39212E+14	22	Right testicular pain	3 months	a/w swelling	1	0	Normal	WNL	WNL	Medical		UM			22.5
2.39212E+14	25	Left Testicular pain	3 months	suprapubic pain, pain during micturition	3	2	Normal	WNL	WNL	medical + psychiatry referral		UM			21
2.39212E+14	27	Left Testicular pain	48 months	None	5	2	left gr 3 varicocele	left gr 3 varicocele	WNL	Medical		UM			20
2.39212E+14	31	Right testicular pain	5 months	None	3	0	right testis slightly enlarged	right epididymitios with funiculitis	WNL	Medical		M			22
2.39212E+14	24	Left Testicular pain	3 months	h/o left epididymitis present	3	1	Normal	WNL	WNL	Medical		UM	history of epididymitis		22
2.39212E+14	19	Left Testicular pain	24 months	left lower abdomen pain	4	1	left gr 2 varicocele	left gr 2 varicocele	WNL	Medical		UM			19.5
2.39212E+14	22	b/l testicular pain	24months	None	3	1	b/l gr 2 varicocele	b/l gr 2 varicocele	WNL	Medical		UM			22

2.39212E+14	31	Left Testicular pain	8 months	None	5	2	Normal	left orchitis	WNL	Medical		M			24
2.39212E+14	38	Left Testicular pain	6 months	swelling over left testis, h/o endo CLT	4	1	left gr 3 varicocele	left gr 3 varicocele	WNL	Medical		M	history of endo CLT		25
2.39212E+14	43	Left Testicular pain	84 months	None	6	4	left gr 3 varicocele	left gr 4 varicocele	WNL	Medical + surgical (lap varicocelectomy)		M			25.5
2.39212E+14	32	b/l testicular pain	12 months	b/l inguinal pain with perineal pain	5	2	Normal	WNL	WNL	Medical	CPPS	M			25
2.39212E+14	33	Right testicular pain	60 months	None	7	2	left gr 2 varicocele	left epididymal cyt, left gr 2 varicocele	urine r/m- trace protienuria	Medical	epididymal cyst with gr 2 varicocele	M			24
2.39212E+14	31	Left Testicular pain	5 months	Left scrotal swelling	1	0	left gross hydrocele	left gross hydrocele	WNL	Surgical		M			21
2.39212E+14	36	b/l testicular pain(left>right)	6 months	h/o urticaria for 2 months	2	0	left epididymal cyst	left epididymal head cyst 2x2.8 cm, minimal fluid in b/l sac	WNL	Medical		M			22
2.39212E+14	65	b/l testicular pain	12 months	k/c/o BPH and HTN	4	1	b/l gr 3 varicocele, gr 2 prostatomegaly	b/l gr 3 varicocele, prostate 33 cc, pvr- 166 cc	creatinine-1.07	Medical	varicocele with BPH	M		BPH + HTN	26.5
2.39212E+14	20	b/l lateral testicular pain, (left>right)	6 months	None	6	2	right gr 1 varicocele, left gr 3 varicocele	right gr 2,left gr 3 varicocele	WNL	Medical		UM			19
2.39212E+14	22	Left Testicular pain	5 months	None	3	1	Normal	WNL	WNL	Medical		UM			21
2.39212E+14	33	Left Testicular pain	6 Months	On and off left flank pain	4	2	Normal	WNL	WNL	Medical		M			22
2.39212E+14	20	b/l testicular pain	3 months	swelling in right testis	6	2	right testis slightly enlarged	right epididymo-orchitis	WNL	Medical		UM			23
2.39212E+14	31	Left Testicular pain	12 months	None	2	1	Normal	left minimal hydrocele with right epididymal cyst	WNL	Medical	epididymal cyst with hydrocele	M			19

2.39212E+14	48	Left Testicular pain	3 months	h/o stroke in 2017	2	1	left gr 3 varicocele	Left grade 3 varicocele	WNL	Medical		M		HTN	27
2.39212E+14	26	Left Testicular pain	4 months	None	5	2	left mild tenderness	WNL	WNL	Medical		UM			23
2.39212E+14	25	Left Testicular pain	4 months	Left scrotal swelling	3	1	Left grade 3 varicocele	Left grade 3 varicocele	WNL	Medical		UM			22
2.39212E+14	23	b/l testicular pain	6 months	a/w generalised body pain, headac	5	2	mild tenderness over left testis	left epididymo-orchitis		Medical		UM			25
2.39212E+14	37	b/l testicular pain(r>l)	12 months	a/w swelling	4	1	left grade 3 varicocele, right testis enlarged, mild tenderness	left gr 3 varicocele with right epididymo-orchitis	WNL	Medical	varicocele with epididymo-orchitis	M			22
2.39212E+14	28	Right testicular pain	48 months	a/w swelling over right testis	2	1	right inguinal hernia	right indidrect inguinal hernia		Surgical		M			21
2.39212E+14	31	Left Testicular pain	60 months	premature ejaculation	2	1	left gr 2 varicocele	left gr 3 varicocele		Medical		M			26
2.39212E+14	34	b/l testicular pain	3 months	penile pain, burning micturition, constipation	6	2	Normal	WNL	WNL	medical + psychiatry referral	CPPS	M			27
2.39212E+14	21	b/l testicular pain	12 months	None	4	1	Normal	outside usg-left testicular cyst		Medical		UM			19.5
2.39212E+14	40	b/l testicular pain	4 months	a/w white discolouration of glans	5	2	BXO like changes present	b/l epididymal cyst		Medical	b/l epididymal cyst with BXO	M	BXO		23
2.39212E+14	57	Right testicular pain	120 months	swelling over right testis	1	0	3x3 cm sebaceous cyst over right scrotal wall	WNL	WNL	surgical		M			24
2.39212E+14	32	Left Testicular pain	12 months	left testicular swelling	2	1	left grade 3 varicocele	left gr 3 varicocele		Medical		M			22
2.39212E+14	33	Right testicular pain	240 months	right inguino scrotal swelling	2	2	right indirect inguinal hernia, right testis could not be palpated			Surgical		M			23.5
2.39212E+14	24	Left Testicular pain	6 months	None	2	1	Normal	WNL	WNL	Medical		UM			20

2.39212E+14	27	Left Testicular pain	4 months	swelling over left testicle	6	3	left grade 3 varicocele	left gr 3 varicocele	semen analysis-oligo astheno zoospermia	Medical		UM			23
2.39212E+14	47	Left Testicular pain	120 months	Storage and voiding luts for 2 months	3	2	left grade 3 varicocele , DRE-grade 2 prostatomegaly	Left grade 3 varicocele		Medical	varicocele with BPH	M		BPH	25
2.39212E+14	28	Left Testicular pain	4 months	left testicular swelling	5	3	left grade 2 varicocele	left mild orchitis	usg w/a-normal	Medical	varicocele with orchitis	M			21
2.39212E+14	62	Left Testicular pain	3 months	swelling over left testicle	3	1	left epididymal cyst 2 X 2 with left mild hydrocele			Medical	epididymal cyst with hydrocele	M		DM	27.5
2.39212E+14	21	Left Testicular pain	2 months	None	2	0	left grade 1 varicocele	left gr 1 varicocele		Medical		UM			19.5
2.39212E+14	27	Bilateral testicular pain	120 months	welling over right testicle	5	1	right grade 1 varicocele	right gr 2 varicocele		Medical		UM			23
2.39212E+14	62	Left Testicular pain	6 months	None	3	2	left gr 3 varicocele	leftvgrade 3 varicocele	WNL	Medical		M			25
2.39212E+14	20	Left Testicular pain	3 months	left small testis with left flank dragging sensation	1	0	left testis slightly small in size	left small testis	WNL	Medical		UM			18.5
2.39212E+14	18	Right testicular pain	3 months	on and off swelling	7	4	bilateral grade 2 varicocele	right gr 3 and left gr 2 varicocele		Medical		UM			21.5
2.39212E+14	52	Right testicular pain	4 months	reddish discolouration of glans	2	0	balanitis present	WNL	WNL	Medical		M			22
2.39212E+14	26	left Testicular pain	144 months	left lower abdomen pain	2	0	3x2 cm cystic swelling over left testicle	left simple epididymal cyst 3.1x1.7		Medical		UM			21
2.39212E+14	60	Right testicular pain	10 months	right testicular swelling	2	1	2x 2 cm right epididymal cyst	right epididymal cyst		Medical		M			23.5
2.39212E+14	32	Right testicular pain	96 months	Burning micturition	1	0	left gr 2 and right gr 3 varicocele	left epididymal cyst 12x 16 mm, left gr 4 varicocele and right gr 2 varicocele		Medical	varicocele with epididymal cyst	M			25.5
2.39212E+14	40	Bilateral testicular pain	15 years	bilateral lower abdomen pain and back pain	3	2	right testis enlarged, firm to	right epididymo-orchitis		Medical		M			26

							hard in consistency								
2.39212E+14	29	Left Testicular pain	120 months	left lower abdomen and left thigh pain	2	1	Normal	WNL	WNL	Medical + pain clinic refferal		M			24.5
2.39212E+14	21	Right testicular pain	4 months	None	5	2	right epididymal cyst 1x1 cm	right epididymal cyst 1x.8 cm		Medical		UM			19.5